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REPORT OF THE COMMISSION OF INQUIRY INTO OCCUPATIONAL HEALTH AND SAFETY AT THE DENISON-POTACAN POTASH COMPANY MINE, CLOVER HILL, SUSSEX, NEW BRUNSWICK

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Madeleine Delaney-LeBlanc
Chairperson
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and Safety Commission
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Dear Madame Delaney-Leblanc:

In September 1989 I was appointed as a Commissioner to inquire into all aspects of occupational health and safety at the mine of the Denison-Potacan Potash Company, Clover Hill, Kings County, New Brunswick. Having completed my inquiry in accordance with the Order-In-Council, I submit herewith my report.

Michael J. Hewitt
Commissioner

September, 1990

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TERMS OF REFERENCE

Under section 7 of the **Occupational Health and Safety Act** and section 2 of the **Inquiries Act**, the Lieutenant-Governor in Council orders a Commission to be issued under the Great Seal to Michael Hewitt to hold a public inquiry into all aspects of occupational health and safety at the potash mine of the Denison-Potacan Potash Company, a partnership of Denison Mines Limited and Potash Company of Canada Limited ("DPPC") in Clover Hill, Kings County, New Brunswick.

The purpose of this Inquiry is to examine into and make recommendations for accident prevention and the improvement of systems and procedures related to compliance with and enforcement of existing health and safety legislation at the D.P.P.C. potash mine, Clover Hill, Kings County, New Brunswick; and without limiting the generality of the foregoing, the Inquiry will examine:

(a) training and experience of staff at all levels,

(b) the Company's health and safety policy, including the role and functioning of the Joint Health and Safety Committee,

(c) the Company's Internal Responsibility System, including internal policies and procedures,

(d) internal communications among managers, and between managers and employees,

(e) accident/incident investigation, analysis and follow-up,

(f) compliance with and enforcement of the **Occupational Health and Safety Act**, regulations and orders.

The Inquiry Commissioner shall accord to any person, who satisfies him that he has a substantial and direct interest in the subject matter of occupational health and safety at the potash mine of the Denison-Potacan Potash Company, an opportunity to give evidence and to call, examine or cross-examine witnesses.

Each such person will be responsible for any legal fees and expenses he incurs as a result of participation in or attendance at this Inquiry.

PREFACE

The Commission of Inquiry was appointed subsequent to the Premier of New Brunswick, The Honourable Frank McKenna, receiving a letter from the office of the Sub-district Director, Atlantic Provinces, United Steelworkers of America in which a request was made on behalf of Local 9129 that an independent commission of inquiry be appointed to investigate the safety of operations at the Denison-Potacan Potash Mine at Clover Hill, Kings County, New Brunswick. The Union expressed concern over the seven fatalities which had occurred since the mine began operating in 1985, and requested that the Commission address all aspects of health and safety at the mine and make recommendations regarding safety and training programs. Subsequent to my appointment as Commissioner, I appointed Mr. James E. Anderson, Q.C., of Anderson, Sheehan, McWilliam, LeBlanc and McNichol as counsel for the Commission.

In accordance with the **Inquiries Act**, notice of the Inquiry was published and three responses received. These responses were reviewed and standing subsequently granted to the following:

Denison-Potacan Potash Company.

United Steelworkers of America, Local 9129.

New Brunswick Occupational Health and Safety Commission.

The latter did not exercise its right to have counsel present, but did provide all information requested, and two of the Commission staff appeared as witnesses.

In my capacity as Inquiry Commissioner I made two visits to the Denison-Potacan Potash Mine at Clover Hill, one in September and one in November 1989. On both occasions a tour was made of the underground workings of the mine. On the tour made in November 1989 I was accompanied by Mr. Anderson. I toured the mill at the mine in April 1990.

On January, 1990, a meeting was held in Halifax, Nova Scotia, attended by Mr. Neil McKelvey, counsel for the Denison-Potacan Potash Company; Mr. Andrew King, counsel for the United Steelworkers of America Local 9129; Mr. James E. Anderson and myself. At that meeting agreement was reached on the protocol to be followed during the Inquiry, and counsel were provided with a list of reference documents I intended to review. Council for the Union and the Company acknowledged my jurisdiction to hold the Inquiry, the only reservation being one placed by the Company. that I would not consider any violation of provincial statutes in my findings. It was also agreed during the meeting that the Inquiry would proceed on a basis of fact-finding, not fault-finding, and that there would be full disclosure.

Mr. Anderson and I provided both Union and Company counsel with the list of witnesses to be called. This list was slightly amended at a later date, but in all cases the witnesses were chosen by myself, following consultation with Mr. Anderson.

The Denison-Potacan Potash Company was most co-operative, not only in arranging the tours of the mine, but also in providing a wealth of information on all matters pertaining to occupational health and safety at the mine. Both Mr. Anderson and I greatly appreciated this co-operation for it facilitated the work of the Inquiry.

The Inquiry was held in Sussex, New Brunswick, during the months of February, March and April, 1990, for a total of twenty- four (24) days. Thirty-five (35) witnesses were heard.

Written submissions based on the evidence heard were received from both the Union and the Company on June 8th, 1990, and oral hearings with respect to the written submissions were held in Sussex, New Brunswick on June 20th, 1990.

At all times the independence of the Inquiry was respected by the three parties with standing. That the Inquiry proceeded as harmoniously as it did is entirely due to the cooperation of counsel for the Company and the Union. Equally important, Mr. James Anderson's preparation of witnesses and introduction of the evidence were highly professional and, without question, contributed to the positive nature of the Inquiry. As well, Mr. Anderson's legal advice throughout was very helpful.

The following were entered as reference documents at the Inquiry:

1. *Report of the Royal Commission on the Health and Safety of Workers in Mines.*
   James M. Ham. 1976.
   Pub: Government of Ontario

2. *Report of Joint Federal-Provincial Inquiry Commission into Safety in Mines and Mining Plants in Ontario.*
   Kevin M. Burkett. 1981.
   Pub: Government of Ontario

3. *Report of the Provincial Inquiry into Ground Control and Emergency Preparedness in Ontarion Mines.*
   T. Stevenson. 1986.
   Pub: Government of Ontario

4. *The Eighth Annual Report (Vol 2) of the Advisory Council on Occupational Health and Occupational Safety (Ontario).*
   1986
   Pub: Government of Ontario

5. *Report on Accidents and Fatalities in Ontario Mines. Standing Committee on Resource Development.* 1988.
   Pub: Government of Ontario

6. United Steelworkers of America publications on occupational health and safety information for workers.

7. Occupational health and safety studies on various topics provided by the Canadian Centre for Occupational Health and Safety.

ACKNOWLEDGEMENTS

It is only appropriate that I acknowledge my appreciation to a number of people and agencies who readily provided me with information, reference documents etc., which assisted in my deliberations.

Mr. Dennis Shannon, Executive Co-ordinator, Ground Control, Cambrian College, Sudbury, Ontario, not only provided the Inquiry with information on common core and ground control training, but travelled to Sussex and made a presentation to the Inquiry on those topics. His contribution was in my view significant, and greatly appreciated.

Mr. Hugh Macdonald, Deputy Minister, Department of Labour; Mr. Jack Noonan, Executive Director Occupational Health Division, and Mr. James LeBlanc, Director, Occupational Health, Department of Labour, Government of Nova Scotia, for providing me with access to their library and for other occupational health and safety information.

Mrs. Wendy Newman, Director, Information Response Services, Canadian Centre for Occupational Health, Hamilton, Ontario, for providing me with a wealth of information on a variety of occupational health and safety topics.

Mr. W. Coughlan, Mine Accident Prevent Association of Ontario, for information on statistical studies into mine accidents.

Mr. Ken Holmeshaw, Ministry of Skills Development, Government of Ontario, for information on the common core program.

Mr. Paavo Kivisto and Kirsty Cummins, Mining Health and Safety Branch, Sudbury, Government of Ontario for assisting me to locate information on the common core program.

Mr. Layton McClare, Mr. Ray Blanchard and Mr. Stuart Cowen, New Brunswick Occupational Health and Safety Commission, for providing all the files and documents requested, and in particular to Mr. Cowen for helping with arrangements for my tours of the mine, and in the compilation of the glossary of mining terms.

Mr. J. J. Bubnick, Potash Corporation of Saskatchewan Ltd. for information on the Loss Control Program in Saskatchewan.

To Margaret Graham and the staff of Verbatim Inc. for their excellent service during the course of the hearings and in the preparation of this report.

All Provincial and Territorial governments who kindly forwarded copies of legislation pertaining to mining.

INTRODUCTION

Denison-Potacan Potash Company (DPPC) is a partnership owned 60% by Denison Mines Limited (Denison) and 40% by Potash Company of Canada Limited (Potacan). Potacan is a Canadian company 50% owned by each of Enterprise Miniere et Chimique (EMC) of France and Kali und Salz AG (K+S) of West Germany, each of which is a significant participant in world potash markets. EMC is owned by the Republic of France. K+S is a subsidiary of BASF AG of West German. Denison is responsible for the overall management of the operations of the partnership.

Production of potash commenced in July 1985, and commercial production status was achieved in December 1986. The DPPC potash mine and ancillary processing facilities are capable of sustaining an annual production rate of 1.3 million tonnes of fertilizer grade potash products.

Continuous cutting and drill-and-blast mining methods are used in the mining of the raw ore, which is then processed in the mill. As one would expect in a new mine the equipment is modern, incorporating the latest in design in most instances.

In addition to the mining and milling facilities, the mine site includes a loadout facility, an office building and an on-site storage building with a capacity of 90,000 tonnes.

DPPC manages development and production operations at the mine. Its responsibilities include overall direction and supervision of mine management in respect to administrative services and the operation of the mine and all facilities in connection with it, including the selection, training and supervision of operating personnel. As at October 31, 1989, the work force at DPPC comprised of 487 employees, 355 of whom were subject to a collective agreement. DPPC has a policy of local hire which has had a positive impact on the economy of the area.

DPPC has engaged Canadian Mine Development (CMD) to perform research and development mining employing drilling and blasting methods. CMD is a long established mining engineering, consulting and contracting company with specialized expertise in production, equipment design and mining techniques. Its role at DPPC is to explore mining methods and to augment production by performing drill-and-blast mining. At present, CMD has approximately 60 employees on site including staff and supervisory personnel and 50 hourly workers.

The ore body in the mine is complex, a fact that was addressed from the outset by DPPC in that the Company has assembled an engineering staff of excellent quality that includes well qualified rock mechanics personnel. As well, DPPC makes use of consultants in this field and has had the benefit of the experience of other potash mines in Canada, and that of its partners in France and Germany.

The overall impression I derived from the evidence was that DPPC has achieved a lot in the few years the mine has been in operation, bearing in mind that its policy of local hire means that it draws from a work force which does not have the reservoir of mining experience one usually finds in the mining industry. The issues that were raised during the Inquiry centered in large measure around poor communications; concerns over the training required; a feeling on the part of the workers that they were not properly consulted on matters directly affecting their health and safety at work, and the belief that the Company's efforts in training, health and safety matters were not coordinated to good effect. None of these concerns are unique to the mining industry, or to the DPPC mine. In addressing them therefore, one can turn for comparison to a number of earlier studies and reports, as was done in this instance.

It is my view that the road ahead is likely to be smoother if the principal stakeholders reflect on what transpired in the recent past, and if those experiences - both good and bad - are analyzed and the product of the analysis put to good use, especially in the implementation of the Loss Control Program. The recommendations in this report are made because the evidence suggests they are necessary, knowing that the Company might well have effected the suggested changes by the time the report is published. The same, of course, applies to those recommendations which apply exclusively to the United Steelworkers of America and to the New Brunswick Occupational Health and Safety Commission.

Of all the evidence given at the Inquiry, a statement made by one witness is worth remembering because it conveys in very simple yet forthright words the attitude that must prevail in the workplace if safety programs are to work, and if the most precious of resources in any mine, "The Men of the Deeps", is to be protected.

Mr. Claude Grenon, Shift Supervisor (now retired) said:

> I realize that sometimes there is more than one way to do a job safely, but if I can help them out in any way... to

> possibly make it easier for them, okay, then the end result would be to do a good days' work, because the bottom line is getting the product on the belt. But like I say, the way I see things is first of all I have to look out for my men, and make sure they are looked after and they look after themselves.

EXECUTIVE SUMMARY

INTRODUCTION

DPPC's position as presented in the November 1989 and June 1990 submissions to the Inquiry is that the operation is, and always has been safe, but that improvements are continually taking place. The Company's concerns centered on what is believed to be the circumvention of the Internal Responsibility System (IRS) by the workers and the involvement of the Union in safety matters which should be addressed by the IRS. The Company also expressed the view that the New Brunswick Occupational Health and Safety Officer who visited the mine did so too frequently, involved himself in labour relations issues, and allowed himself to be used by the workers as a means of circumventing the IRS.

The principal areas where the workers felt there was room for improvement were as follows:

1. Ground control.
2. Fire protection.
3. Ventilation and monitoring.
4. Existing health and safety programs.
5. Training for managers and workers.
6. Joint Health and Safety Committees.
7. Health services.
8. Contractors.

As well, the Union stressed throughout their concern that there was insufficient consultation with the workers on health and safety matters.

From the outset the views of the two principal stakeholders were sharply divided. I noted, however, that as the Inquiry progressed there tended to be a confluence of thought in some key areas, the need for consultation between management and workers being one example. I have attempted throughout, therefore, to find common ground on all the issues raised, recognizing that both parties are sincerely committed to ensuring that the health and safety of the workers is enshrined in all activities at the mine.

SAFETY POLICY

A safety policy is a formal declaration of commitment to the occupational health and safety of all employees. As such the most recent DPPC Safety Policy Statement is quite adequate provided that what is considered "acceptable industry practise" is determined by conformity to the applicable legislation, and that the term "employee" is all-inclusive, from the Vice-President and General Manager to the most recent novice miner. The Union did not question the commitment of DPPC to safety, but had concerns regarding the application of that commitment with respect to the assignment and organization of resources appropriate to the needs of the workers.

Given the recent changes at the mine, most notably the introduction of the Loss Control Program and the hiring of a Loss Control Superintendent reporting directly to the Vice-President and General Manager, there is no question that all of the safety issues raised can be addressed.

ORGANIZATIONAL STRUCTURE

A review of the organization chart and job descriptions of DPPC revealed a lack of clarity and some duplication of major accountabilities at different levels of seniority. In my opinion this had a negative impact on the efforts of the Company to establish and maintain a comprehensive, coordinated approach to the development and maintenance of the health and safety program.

Organization charts and job descriptions are important documents which identify reporting relationships, and indicate where authority and responsibility lies. They are the documented fabric of an organization and should indicate how the elements of an organization interact. In addition, job descriptions are the key criteria against which performance targets are set and results measured. The relationships at DPPC need to be clearly set out in job descriptions and an organization chart which are, and remain, in harmony.

INTERNAL RESPONSIBILITY SYSTEM

1. Communications Between Managers

The evidence revealed that in many respects there were good communications between managers. The problems arose with respect to dealing with occupational health and safety issues, and it is clear to me that the managers did not have a sound process for communicating the need for action and/or follow-up on safety matters. This lack of effective communication prevented the former General Manager from being properly informed, and was also reflected in communication difficulties between shift supervisors and their superiors, and vice versa. As a consequence the system tended to be reactive, not proactive and there was, inevitably, confrontation between management and workers.

2. Communications Between Managers and Workers

The IRS was not working as it should at DPPC. It was being circumvented by both workers and supervisors, but as the exception rather than the rule. Based on the evidence one cannot place the responsibility for the failure of the system on the workers or, necessarily, entirely on the shift supervisors. In my opinion the evidence shows that the workers usually addressed their safety problems to their supervisors as is required. When circumvention of the system did occur it was as a result of frustration at not receiving responses regarding safety or maintenance problems from their supervisors. The circumvention on the part of the shift supervisors occurred either as a consequence of not obtaining an adequate response from their superiors, or through the improper use of the Neil George Safety System to refer safety problems out of the *direct* responsibility system to the Safety Department.

The shift supervisor's role as the point of contact with workers is critical. Supervisors are required to provide leadership, example, guidance and instruction in order that the work may proceed safely. In turn they require cooperation from their crews and, when required, support and assistance from more senior levels of management. If the direct IRS is to function as it should supervisors must ensure that the Neil George Safety System is followed *without exception*.

Trust between supervisor and worker is engendered by a free flow of information, with the latter being frank about his concerns and the former not only addressing those concerns but doing so promptly, *and advising the worker of the action being taken*. Silence is invariably construed as indifference. Although there was evidence that this essential relationship had broken down in some instances at the mine, it was quite clear that some supervisors communicated very well with their crews and that there was mutual trust and respect.

JOINT HEALTH AND SAFETY COMMITTEES

The Joint Health and Safety Committees at DPPC were not functioning properly. The reasons given by the Burkett Commission Report for the failure of such Committees can be identified at DPPC. In my view the true role of the Committees has not been fully understood by either party, nor the full potential for positive influence at the mine realized. I believe that there have been four factors influencing the Joint Health and Safety Committees at the mine for some time. They are:

1. The failure of the direct IRS to deal with routine safety matters resulted in workers - and to some degree supervisors - turning to the Joint Health and Safety Committee, the Safety Department or the New Brunswick Occupational Health and Safety Commission Safety Officer for resolution of their problems.

2. The lack of a system that would have ensured that not only were recommendations dealt with as expeditiously as possible, but that Committee members were kept informed as to the progress of such action.

3. Inadequate provision for consultation and involvement in health and safety matters other than "fix-its".

4. Insufficient training for Committee members with respect to their Committee duties.

The crew safety representatives are a part of the Committee. The system in place at DPPC is that they take it in turn to sit on the Committee i.e. take part in the monthly inspection and meeting. In effect this means that any one crew safety representative may only participate once per year. I believe that this should be addressed in order to provide for greater participation, and have recommended accordingly.

If the Company is willing to acknowledge the status of the Committees by providing the resources, training, time and opportunity for full consultation and involvement in the development and monitoring of the safety program, it must be met with the full support and commitment of the workers and Union.

SAFETY PROGRAM.

A. Loss Control Program

The Loss Control Program currently being implemented at DPPC has the capability of addressing all of the issues this Inquiry was directed to review. The program has the support of the Vice-President and General Manager, the President of the Union, the Co-Chairmen of the Joint Health and Safety Committees and the Union Safety Inspector. The Union commitment is provisional upon there being full consultation throughout the development and implementation of the Loss Control Program.

B. Mine Design and Engineering Controls

DPPC has well-qualified engineering, geological and rock mechanics personnel, and no evidence was given to question their competence. Evidence was given that they have recently proved and will continue to prove very helpful in the implementation of ground control standards, procedures and training.

The principal issue raised by the Union with regard to mine design was the location of the fuel storage area and the refuelling station in the fresh air intake side of the mine. I have recommended that these facilities be re-located.

C. Inspections

Inspections constitute a vital part of a safety program which, when conducted properly, identify health and safety risks and provide an opportunity for remedial action. The inspections carried out at DPPC include:

- Supervisory inspections.
- Loss Control Department inspections.
- The General Manager's inspections.
- Joint Health and Safety Committee inspections.
- New Brunswick Occupational Health and Safety Commission inspections.

Some of the DPPC inspections were not properly planned, scheduled or documented, nor were they coordinated in such a manner as to derive maximum benefit from the activities of the various groups conducting the inspections.

I believe that formal training for supervisors, Loss Control Department staff and Joint Health and Safety Committee members is required with emphasis on planning, conducting, and documenting inspections, and in the analysis of inspection results.

D. Group Meetings

Group meetings for the purpose of discussing safety-related issues form an essential part of the safety program at DPPC. They are of course not the only form of communication between managers as a group, or between managers and workers. Equally important are the daily contacts that occur at the shift cross-over, when workers and supervisors exchange information on safety-related events or changes in the workplace. There are four principal types of group meetings at the mine, as follows:

- General Managers meetings
- Engineering staff/Production staff meetings
- Crew Safety meetings
- Joint Health and Safety Committee meetings

The quarterly meetings held by the General Manager with Joint Health and Safety Committee members, Union representatives and supervisory staff appear to be successful. His regular meetings with senior staff also serve an essential function.

The meetings held by the Engineering/Production staff appear to be well planned and effective.

The crew safety meeting on the other hand have been largely confrontational and non-productive. I believe that there are two reasons for this:

- the meetings were used by workers as a means of again raising safety concerns which had not been addressed by the direct IRS.

- specific skills are required in order to plan, organize and chair meetings, and I am not convinced that the supervisors have been provided with the training necessary to equip them for this task.

The Joint Health and Safety Committee meetings were also confrontational, and in large measure for the reasons identified earlier. I have made recommendation which address the training needs of Joint Health and Safety Committee members and supervisors in this important area.

E. Accident/Incident Investigation; Incident Recall

The accident/incident investigation and incident recall procedures have the potential for a very positive impact on the workplace. They are consultative and place the supervisor and worker side by side in a fact-finding, not a faulting-finding process that seeks to determine accident/incident causes in order that repetitions can be avoided. The one area where I believe DPPC may be creating a potential for unnecessary friction is the exclusion of the crew safety representative from the accident/incident investigation process on the ground that is a fact-finding process. Since they *are* involved in the incident recall (another fact-finding exercise) and the Right to Refuse procedure, I find the Company's position somewhat inconsistent.

F. Training

Training is a critical element of any occupational health and safety program. The purpose is to prepare employees for the tasks they are to undertake, and should provide not only the skill and understanding required but also heighten the sense of safety awareness both of the worker being trained and those with whom he/she works. The Ham Commission Report, the Burkett Commission Report and the Stevenson Inquiry Report all place great emphasis on the need for training at all levels in the mining industry.

DPPC has taken steps to provide health and safety training for managers as recommended by the International Loss Control Institute (ILCI) audit of Mr. Crucefix. What is now needed is a review of the training programs for supervisors and workers. In my opinion the intended purpose of the training program at DPPC is not being achieved. The consequences of this can be seen in some of the communications and other problems which have arisen at the mine. If workers and supervisors are not comprehensively trained as *a priority, with appropriate follow-up,* on topics such as the IRS, one should not be surprised if the system does not work. There appeared to be some resistance on the part of management to the introduction of a common core training approach at DPPC, and to the certification of shift supervisors. Surely there should be readily identifiable *basic* standards established for shift supervisors in such areas as safe mining practices, emergency procedures, mine rescue, communications etc. The recent work of the Engineering Department in developing a modular training approach to ground control training is a clear recognition of the effectiveness of using a "common core" program, adapted to meet the needs of DPPC.

The program at DPPC requires improvement in the planning, organization, delivery, supervision and evaluation of training both for workers and supervisors. As well there is a need to train the trainers. My recommendations, if implemented, would simply require a reorganization of current resources, material, and mode of delivery.

G. Emergency Preparedness

Mining is a potentially dangerous business and it is therefore essential to have emergency response procedures in place, well understood, and capable of dealing with a worst case scenario. The ILCI audit of Mr. Crucefix dealt with this area at length and recommended that DPPC put in place a comprehensive emergency response plan/program. I strongly support those recommendations.

The issue on which most of the evidence at the Inquiry centered relate to the fire safety aspects of the emergency response program. The evidence showed a lack of clearly defined roles, responsibilities and planning in vital areas such as fire extinguisher inspection and maintenance. The fire-fighter training program was poorly planned and documented, and the fire extinguisher training program was minimal in content. Mine rescue training on the other hand was excellent. The issue of the use of the SCADA (Systems Collection And Data Acquisition) alarm system as part of the underground alarm system is one on which workers and the Union feel very strongly. I have recommended that the SCADA be fully incorporated into the underground alarm system. My recommendations include reference to the need to improve the fire safety inspection system, fire-fighter and fire extinguisher training etc.. The application of Loss Control principles to the problems identified should result in significant improvement.

H. Industrial Noise

The only DPPC action taken to date with regard to worker exposure to industrial noise is to provide hearing protection and encourage its use. DPPC has now purchased noise monitoring equipment and intends to conduct noise level surveys.

Noise induced hearing loss is irreversible and it is therefore imperative that a proper program of noise monitoring, posting of high noise level areas, use of engineering controls wherever possible, worker education, and audiometric testing be introduced at the mine, and that henceforth there is compliance with the noise Regulations. I have recommended that DPPC consult with qualified industrial hygienists with regard to the above-noted program suggestions.

I. Occupational Health and Safety Promotion

DPPC has a program which recognizes workers with good safety records. In support of this program I have made suggestions for recognition of Joint Health and Safety Committee members and crew safety representatives. I have also suggested that consideration be given to an award for the supervisor who most actively practices and promotes health and safety, the recipient to be determined by the Joint Health and Safety Committee based upon feedback from the workers.

I believe that the provision of occupational health and safety information through the establishment of a library accessible to all employees will serve to support the efforts of the employer, the Union and the employees to promote health and safety in the workplace.

GROUND CONTROL

The evidence indicates that DPPC has a very difficult ore body to deal with, and that the Company has assembled the engineering and technical resources required to ensure that the operation is carried out as safely as possible. I am satisfied that there is substantial communication between the engineering staff and the production supervisory staff on a daily basis, reinforced with weekly and bi-weekly meetings. The Company expressed the view that the workers lack confidence in the actions of the Company with regard to ground control because frequent changes are made in the mining methods. Evidence given by workers proved that this was indeed the case.

The degree of expertise in the Engineering Department was not matched by the necessary level of understanding of ground control by the workers, nor were there in place the essential work standards and procedures for the miners and supervisors to follow. The Senior Rock Mechanics engineer correctly identified the necessary elements of a good ground control program as communications, training and good engineering. The mine has good engineering but lacked a training program in ground control. The communications difficulties identified in the IRS simply compounded the problem. The standards and procedures stated by the Senior Rock Mechanics Engineer to be essential were present in the Engineering Department, but there was nothing formal and little informal at the workface.

In recent months the Company has taken action to correct these shortcomings. I believe that with the introduction of formal training in ground control, along with the development of standards and procedures which are consistently practised, DPPC should be able to effectively address the safety and confidence problems related to ground control.

VENTILATION AND AIR MONITORING

It is clear that there has been improvement in ventilation and dust control since the Ventilation Engineer arrived at the DPPC mine in January 1989, and that even more work has been done since he has had the assistance of a Ventilation Technician. These men carry out a program of air monitoring for air volumes, diesel contaminants, blasting fumes etc., and twice per year monitor dust levels.

There was evidence that the volume of air flowing through the mine is adequate, although a consultant retained by DPPC has made suggestions for further improvement. The concerns raised by the workers centered not on the quantity of air in the mine, but the quality. It is apparent that the current air monitoring program will not adequately determine the level of exposure of workers to air contaminants for the period of a full shift. This leads me to conclude that a properly designed program of air monitoring for diesel fumes, blasting fumes and dust should be introduced in full consultation with qualified industrial hygienists.

RIGHT TO REFUSE

Workers at DPPC appear to have exercised their Right to Refuse in a responsible manner. I have recommended that the training program emphasize the importance of the Right to Refuse legislation, and its proper use. I have also recommended that some clarification of section 21(2) of the **Occupational Health and Safety Act** be provided.

CONTRACTORS

While the evidence showed that there had been safety problems in the Canadian Mine Development (CMD) area from time to time, this did not in my opinion show that there had been regular disregard for safety practices or the Mining Regulations. There is a clear need for better liaison between the DPPC and CMD operations, primarily through the Joint Health and Safety Committee(s). There was evidence that, for a period of time, CMD did not participate in the DPPC Committee as is required by legislation. CMD has now formed its own Committee through appointment, but intends to hold elections as required by the Act. I have recommended that the issue of CMD's Joint Health and Safety Committee be reviewed by the New Brunswick Occupational Health and Safety Commission.

I believe that the implementation of the Loss Control Program at DPPC should incorporate the activities of CMD. That is to say, the same approach should be taken with regard to job/task analysis, training, standards and procedures etc.

MEDICAL EXAMINATIONS

The medical examinations program at DPPC should be directly related to the work being - or to be - performed, and to an analysis of all possible health and safety hazards associated with that work. Medical examinations should only be undertaken if there is a clearly defined need or purpose. The usual provision regarding medical confidentiality should apply to all medical files retained by DPPC personnel.

THE UNION

I conclude that the Union has conducted itself in a manner which it felt was dictated by the circumstances, with respect to health and safety issues. The President of the United Steelworkers of America Local 1929, Mr. T. Harris, stated that the Union only became involved when, in their view (and that of the workers) safety concerns were not being addressed by DPPC. Mr. Harris has indicated his support in writing for the Loss Control Program, subject to the proviso that there is full consultation with the workers and the Union.

DPPC has effected a great number of changes in the past few months, and I believe that the Union now has the opportunity to support the Company as it strives to improve the occupational health and safety standards at the mine.

THE NEW BRUNSWICK OCCUPATIONAL HEALTH AND SAFETY COMMISSION

Both the Company and the Union expressed some concerns with respect to the role of the Commission at the mine. The company expressed the view that the Safety Officer had inspected too frequently, and had been used by the workers as a means of circumventing the IRS. The Union on the other hand has concerns with regard to the enforcement of the Act and Regulations. Both parties expressed confidence in the Safety Officer (Mr. S. Cowen), who has conducted most of the inspections at the DPPC mine over the past five years.

With respect to the Company's position that Mr. Cowen had involved himself in issues where he should not, the evidence clearly shows this not to be the case. In all three cases cited by the company Mr. Cowen conducted himself in an appropriate and professional manner and in accordance with the requirements of his office. Further, in all three cases Mr. Cowen was specifically asked by senior DPPC staff to become involved.

There was no evidence that workers (or Union officials) frequently contacted Mr. Cowen on safety issues. On the few occasions that he was contacted he responded appropriately. During his evidence Mr. Cowen repeatedly stressed how he tried to promote an increase in the level of safety awareness, and a proper use of the IRS at the DPPC mine. In my opinion Mr. Cowen has made a positive and commendable contribution to safety at DPPC.

The issue of non-compliance was raised by the Union as a concern. I have made recommendations which I believe will make it easier for Safety Officers to uniformly and consistently administer and enforce the legislation.

I have also made a number of recommendations that the Commission offer its assistance and support to DPPC, in particular in the area of education and training. It is my belief that the Commission has a positive role to play as a catalyst for change.

TWELVE-HOUR SHIFTS

In my opinion the evidence given at the Inquiry did not prove that 12-hour shifts had any impact, negative or positive, on safety. I have therefore deferred the matter to the New Brunswick Occupational Health and Safety Commission for consideration pursuant to the relevant provisions of the legislation.

DISCIPLINE

During the Inquiry the Union raised the issue of discipline. I consider discipline to be a labour relations' matter whether or not it is imposed with respect to safety infractions. The Loss Control Program addresses the issue of fair and consistent discipline and I suggest that the matter be dealt with through discussion between the Company and the Union.

CONCLUSIONS

The Terms of Reference which applied to the Inquiry required that I examine into and make recommendations for accident prevention and the improvement of systems and procedures related to compliance with and enforcement of existing health and safety legislation at DPPC. I was to include in that examination the training and experience of staff; the DPPC health and safety policy; the role and function of the Joint Health and Safety Committee; the Company's IRS; communications between managers and between managers and workers; accident/incident investigation, analysis and follow-up, and compliance with the legislation.

The Inquiry examined all of these matters in great detail and the facts which have emerged indicate that the atmosphere of mistrust and confrontation which existed prior to the Inquiry being commissioned did not spring from any one cause, but came about as the inevitable result of weaknesses in key areas such as training, formal work standards and practices, communications and management/worker consultation. Most of all, the Company lacked a comprehensive approach to ensuring that production and safety issues were addressed in a systematic, mutually supportive manner.

It became apparent that a number of positive changes respecting occupational health and safety issues had occurred at the mine since the Inquiry was first Commissioned, and that many of the concerns raised by the Union are being actively addressed by the Company. One example is seen in the commendable decision by DPPC to implemention all of the critical program suggestions of the ILCI audit completed in September 1989 by Mr. M. Crucefix, and another is the implement of a Loss Control Program. This program should address the problems which have plagued the operation in the past. It will only be successful, however, if there is full consultation with the workers and Union throughout. Consultation does not mean an abrogation of management rights or responsibilities, but simply discussing with and involving in the process the workers, whose commitment is essential if the program is to succeed. The biggest challenge facing the Company and the Union/workers is how to effect the necessary changes in the operation in such a manner as to emphasize throughout that meaningful relationships between people are essential; that proper and continuing communication and consultation helps to establish those relationships, and to recognize that from this process will spring the trust and respect between worker and supervisor that brings the commitment of both into harmony, to the benefit of all.

The recommendations which follow may appear numerous, but they are firmly based on the evidence heard during the Inquiry, and in large measure echo the critical program suggestions for the improvement contained in the ILCI audit of September 1989. The recommendations are intended to assist the company, the workers, the Union and the New Brunswick Occupational Health and Safety Commission in addressing the occupational health and safety issues raised. The implementation of the recommendations requires in most instances making more efficient and effective use of existing human and material resources, and entrenching a process of consultation with workers and the Union to a greater degree than was the case in the past. The introduction and implementation of the Loss Control Program, better training, and emphasis on the importance of the direct and contributive IRSs will all require full and continuing cooperation between the Company and its workers. It should be noted that both DPPC and the Union have provided written commitment in support of the Loss Control Program. I firmly believe that, given the dedication and goodwill which I witnessed on the part of DPPC, the workers and the Union, the DPPC mine could well become a model for others to emulate.

RECOMMENDATIONS:

1. **Safety Policy**

    1.1. **That the Vice-President and General Manager focus the Company's commitment to safety by playing a lead role in the implementation of the Loss Control Program, ensuring that the program receives full support from all levels of management.**

2. **Organizational Structure**

    2.1 **That all job descriptions be brought up to date and thereafter maintained either annually or when there is a change in duties; that employees read and sign their job description each time it is amended, and that the Vice-President and General Manager sign all job descriptions.**

    2.2 **That the organization chart be reviewed annually, or whenever an organizational change is made, and that the Vice-President and General Manager sign the current copy which is then posted at the mine, accessible to all employees.**

3. **Communications Between Mangers**

    3.1 **That, as part of the Loss Control Program, procedures be established to ensure that all managers, including the Vice-President and General Manager, be kept fully informed on all matters pertaining to occupation health and safety programs at the mine.**

    3.2 **That the following ILCI critical program suggestions respecting the Vice-President and General Manager's activities and profile be implemented: 1.3 - (1, 2, 3 and 4.)**

4. Communications Between Managers and Workers

4.1 That DPPC review the "4 steps" of the IRS in order to reinforce the concept that the *direct* responsibility system must be used to deal with safety issues, and that a policy statement be issued affirming the Vice- President and General Manager's support for that approach. This statement should provide his assurance that workers and crew safety representatives can, when necessary, pursue matters through the IRS without fear of retribution.

4.2 That training for all the staff regarding the IRS be enhanced, with emphasis on the Neil George Safety System, and that a procedure ensuring follow-up and reinforcement of the training be developed, including the auditing of the safety cards by the Loss Control Department.

4.3 That the Union reinforce with its members the importance of conforming at all times with the IRS, and in particular with the Neil George Safety System.

5. Joint Health and Safety Committees

5.1 That:

(a) the ILCI critical program suggestions 1.11 regarding the Joint Health and Safety Committees be fully implemented;

(b) the implementation of the above ensures that the Vice-President and General Manager receives copies of all Joint Health and Safety Committee recommendations, and that he acknowledge receipt of same in writing; and

(c) in implementing the ILCI critical program suggestions on Joint Health and Safety Committees steps be taken to establish proper procedures for the circulation of recommendations and time frames for response, and that the responsibility for this task be carried by the management co-chairman.

5.2 That the Joint Health and Safety Committees be give a formal consultative role in the review, development and application of all occupational health and safety matters at the mine including the implementation of the Loss Control Program, and that the role of the Joint Health and Safety Committees as set out in section 15 of the Act be actively encouraged by the Vice-President and General Manager.

5.3 That training and education be provided for all Committee members and crew safety representatives in order that they may properly carry out their responsibilities, and that supervisors also be given training and education with respect to the Committees.

5.4 That the Committee co-chairmen be appointed for at least one year, that only in exceptional circumstances are substitutes to attend Committee meetings in the co-chairman's place, and that minutes of the meetings accurately reflect what transpired and are posted without delay.

5.5 That both Committee co-chairmen, as a matter of Company policy, accompany the Safety Officer on his tours of inspection.

5.6 That:

(a) the responsibility of the crew safety representative regarding their role in both the Joint Health and Safety Committee *and* the IRS be defined by the Company and supported by the Union in a clearly worded statement, posted throughout the property;

(b) provision be made for crew representatives to play a more active role in the Joint Health and Safety Committee through attendance at meetings more frequently; by permitting them to accompany the Safety Officer throughout his inspection, and to attend the meeting that follows; and

(c) provision be made by DPPC for all crew safety representatives to meet as a group at least every three months, and if possible with the Committee co-chairmen with the same frequency.

5.7 That CMD conform to the *Occupational Health and Safety Act* by allowing its workers to elect their members of the Joint Health and Safety Committee and from those members to choose a co-chairman.

5.8 That the Union provide for its members information and educational material to whatever degree its resources will permit in support of the Joint Health and Safety Committees and at all times encourage full support and cooperation with management's efforts on behalf of the Committees, and with Committee members.

5.9 That:

(a) the New Brunswick Occupational Health and Safety Commission make a ruling as to whether or not the formation of a second Joint Health and Safety Committee underground at DPPC is in compliance with the provisions of the *Occupational Health and Safety Act;* and

(b) the New Brunswick Occupational Health and Safety Commission play an active role in support of the education/training of Joint Health and Safety Committees and crew safety representatives.

6. Loss Control Program

6.1 That implementation of the Loss Control Program is carried out in full consultation with the Joint Health and Safety Committees, the workers and the Union.

6.2 That the Union and its members offer their full support to the Loss Control Program.

6.3 That the New Brunswick Occupational Health and Safety Commission offer its full support to the Loss Control Program at DPPC.

7. Mine Design and Engineering Controls

7.1 That the ILCI critical program suggestions14.2, 14.2, 14.3 be implemented in full.

7.2 That the fuel storage area and re-fuelling station be relocated from the fresh air to the exhaust air side of the mine as soon as can be arranged.

8. Inspections

8.1 That the ILCI critical program suggestions 3.1 to 3.9 be implemented in full.

8.2 That training on how to plan, conduct and document inspections be given to supervisors, Loss Control Department staff, Joint Health and Safety Committee members and crew representatives.

8.3 That the inspections of the Engineering Department staff be included in the overall plan/schedule of inspections to ensure proper coordination/cooperation with others carrying out inspections.

8.4 That a policy statement be issued by the Vice-President and General Manager formally authorizing Loss Control Department Staff to take appropriate remedial steps to correct unsafe conditions which they encounter.

8.5 That copies of all inspection reports generated be provided to the Joint Health and Safety Committees, the Loss Control Department and posted on notice boards accessible to workers.

9. Group Meetings

9.1 That DPPC implement in full the ILCI critical program suggestions 16.1 and 16.4.

9.2 That shift (and other) supervisors be given adequate training in communications and other skills related to the planning, organizing and chairing of meetings.

9.3 That worker suggestions for improvement of the meetings be encouraged.

9.4 That minutes of the crew safety meetings be circulated to the Loss Control Department, the Joint Health and Safety Committees and the crew safety representatives, and are posted for all workers to see.

9.5 That:

(a) the first line supervisors from the back-fill and drill-and-blast groups attend the bi-weekly meetings arranged by the Superintendent of Engineering; and

(b) the shift supervisors from the cutter area attend the weekly meetings arranged by the Superintendent of Engineering to discuss the cutting area.

10. Accident/Incident Investigation and Incident Recall

10.1 That crew representatives be formally included in the accident/incident review procedure along with the supervisor and the worker.

10.2 That the accident/incident investigation report - Exhibit 66 - be amended to include the Joint Health and Safety Committee on the circulation list.

10.3 That crew safety representatives be provided training in investigation methods and accident cause/analysis.

10.4 That the ILCI critical program suggestions 5.1 to 5.8 inclusive be implemented in full.

10.5 That the Fire Chief be notified of and involved in all fire or fire/potential related investigations.

11. Training

11.1 That all training programs be made the responsibility of the Loss Control Superintendent and that all training be supervised and evaluated.

11.2 That a "common core" approach be taken and the development of training modules be undertaken for all aspects of the program, including the training of shift supervisors; that appropriate adult education techniques be utilized, and particular attention be given to the priority ranking of what is to be taught.

11.3 That the training of shift supervisors include rotation to the Loss Control Department for instruction in inspections, audits etc.

11.4 That the trainers be trained. This includes trainer training for shift supervisors.

11.5 That the training program make provision for refresher training in accordance with an established schedule.

11.6 That the New Brunswick Occupational Health and Safety Commission rule on the applicability of Mining Regulation 77.58, Section 287(2) to the DPPC operation with particular reference to the establishment of school stopes.

11.7 That the New Brunswick Occupational Health and Safety Commission:

(a) establish a certification standard/requirement for shift supervisors with emphasis on the practical aspects of mining;

(b) establish a certification standard/requirement for blasters; and

(c) provide whatever assistance is appropriate in the development/implementation of the training program.

11.8 That the ILCI critical program suggestions 2.2 to 2.6 and 10.1 to 10.3 inclusive be implemented in full.

11.9 That the Union actively support, promote and, where possible, supplement the training program.

11.10 That all other training recommended in this report be incorporated into one comprehensive training program.

12. Emergency Preparedness

12.1 That the ILCI critical program suggestions 7.1 to 7.11 inclusive be implemented in full.

12.2 That the inventories - currently being carried out by the Loss Control Department - of the placement and condition of all fire protection/prevention equipment and supplies on both the surface and underground be completed and thereafter maintained, and that the deficiencies noted be fully addressed by the responsible parties.

12.3 That the Loss Control Department fire safety inspections be properly planned, organized, implemented and documented on a scheduled basis; that copies of the inspection reports be provided to senior management, and the Joint Health and Safety Committees, and that copies are posted on worker's notice boards.

12.4 That the Superintendents of the mill and the mine plan. organize and implement inspections of all fire safety equipment in their jurisdictions; plan, organize and implement a program of maintenance of that equipment, and formally designate persons tasked with the responsibility for both the inspection and maintenance programs.

12.5 That:

(a) training in the use of fire extinguishers be given to all new employees during their orientation and to all workers annually; and

(b) the training be standardized, documented, and as comprehensive as possible.

12.6 That:

(a) fire-fighter training be properly planned, scheduled, implemented, documented and maintained in order to ensure that all fire-fighters are kept at a proper state of readiness;

(b) the training be comprehensive, to a specific standard and that certificates of competence be issued;

(c) the personal protective equipment be so organized as to fully serve its intended purpose in emergencies;

(d) workers designated as fire-fighters remove facial hair which prevents the proper use of self-contained respiratory equipment (Scott Air Packs); and

(e) criteria be established to determine whether or not designated workers are physically capable of safely preforming as fire-fighters.

12.7 That standards and procedures be written and put into effect regarding all tasks with a known fire risk/explosion potential, and that those for the fuel storage area/refuelling station be posted in those locations and enforced.

12.8 That the person trained as the hoist back-up operator be required to attend refresher sessions at the hoist control room at intervals of not greater than three months.

12.9 That consideration be given to assigning one telephone number as the emergency number, and the number ring in the hoist control room on a designated telephone (aside from the backfill emergency telephone).

12.10 That the integration of the SCADA System of warning horns/bells be made as complete as the existing conveyor system will allow, and that it be maintained in a fully operational state thereafter as a part of the emergency warning system in the mine.

12.11 That the stench gas tests be held in conjunction with a test of the SCADA Warning System, and that these tests be held one per year for each shift, at three month intervals.

12.12 That:

(a) specific persons be tasked with responsibility for the maintenance of first aid kits, both on the surface and underground; and

(b) the Loss Control Department establish locations for the placement of all first aid kits, advise all employees of those locations and thereafter monitor the maintenance of the first aid kits by the persons so designated.

12.13 That the New Brunswick Occupational Health and Safety Commission legislate a requirement that the mine submit annually an emergency preparedness plan.

13. Industrial Noise

13.1 That a comprehensive noise level survey be conducted throughout the underground and surface operations of the mine by qualified person(s) and that such general surveys be completed at least annually.

13.2 That noise level surveys at specific sites be conducted and repeated as necessary.

13.3 That where possible engineering controls be used to reduce noise to levels not exceeding those prescribed by the legislation, and where this is not possible such sites be posted as high noise level areas.

13.4 That workers be provided with hearing protection for use in all high noise level areas and given appropriate instruction in the hygienic use and maintenance of that equipment.

13.5 That all employees be given education on the subject of noise induced hearing loss, and that the subject be referenced during new employee orientation.

13.6 That audiometric testing be performed by qualified persons at the time of hire and annually thereafter, and that the records of such tests be regarded as medical records, stored and safeguarded accordingly.

13.7 That workers be provided with copies of their audiometric tests, and that the results be explained.

14. Occupational Health and Safety Promotion

14.1 That the ILCI critical program suggestions 17.1 to 17.7 be implemented in full.

14.2 That DPPC give consideration to formal recognition of the work of Joint Health and Safety Committee members and crew safety representatives.

14.3 That some consideration be given by DPPC and the Union for an award to be made by the Joint Health and Safety Committees to the shift supervisor deemed to have made the most significant contribution to the safety program, to be voted on by the workers using crew safety representatives as their intermediaries.

14.4 That a comprehensive library of occupational health and safety information be established, accessible to all employees.

15. Ground Control

15.1 That the ground control training program be improved as follows:

(a) all ground control training be fully integrated into the formal training program of the mine and that the training given during the orientation be enhanced; and

(b) the modular training courses being developed be given to workers (including tradesmen/maintenance staff) and supervisors, and that refresher training courses be scheduled and maintained.

15.2 That standards and procedures be developed for all mining jobs/tasks, and that they be consistently applied and enforced by DPPC.

15.3 That the Joint Health and Safety Committee and the Union be consulted with regard to the training program.

15.4 That appropriate measures be taken to enhance communications with workers on ground conditions and control.

15.5 That all recommendations of the T. Stevenson Report which are applicable to DPPC be implemented.

16. Ventilation and Air Monitoring (All to apply equally to CMD operations)

16.1 That a site-specific and task-specific dust monitoring program be implemented and maintained, both in the mill and underground, in consultation with a qualified industrial hygienist.

16.2 That re-entry blast fume surveys be conducted for an entire shift and with a frequency determined through consultation with an industrial hygienist.

16.3 That:

(a) a program of continuous monitoring for diesel fumes and other air contaminants be implemented, such monitoring to be for the full period of a 12-hour shift, to be site-specific and task-specific, covering all active work areas in the mine, the frequency at any one location determined by the degree of activity at that location; and

(b) the continuous monitoring include the use of personal dosimeters.

16.4 That the recommendations of the Howes Report be implemented.

16.5 That all relevant ILCI critical program suggestions be implemented.

16.6 That:

(a) the program of education and training in ventilation for workers and supervisors be fully developed, integrated into the formal training program and maintained; and

(b) the above-noted program include education on the proper use of respiratory protection.

16.7 That a system be put into place for the daily monitoring of brattice and the placement of parked vehicles in both the DPPC and CMD areas.

16.8 That the use of water as a dust suppressant be implemented as widely as possible.

16.9 That consideration be given to enhancing the lighting for all mining operations as required, especially in dusty areas.

16.10 That copies of all air monitoring surveys be provided to the Superintendent of Loss Control, the co-chairmen of the Joint Health and Safety Committees and the Occupational Health Nurse.

16.11 That the New Brunswick Occupational Health and Safety Commission:

(a) require that a master plan of air monitoring be submitted by the mine, and that this plan outline all monitoring schedules, techniques and equipment to be used;

(b) require that the reports generated pursuant to that plan be submitted to the Commission on a scheduled basis; and

(c) provide assistance as appropriate in establishing the air monitoring program.

17. Right to Refuse

17.1 That the New Brunswick Occupational Health and Safety Commission provide a clearly defined interpretation on the application of Section 21(2) of the *Occupational Health and Safety Act* to the DPPC mine.

17.2 That DPPC reinforce training/education to new employees on the Right to Refuse provisions of the Act, and provide repeat training for all workers on a scheduled basis.

17.3 That the New Brunswick Occupational Health and Safety Commission offer assistance in providing education/training on the Right to Refuse provisions of the Act.

17.4 That the Union reinforce the efforts of DPPC and of the New Brunswick Health and Safety Commission by whatever means possible to ensure that the Right to Refuse is properly understood and, when necessary, exercised in a proper manner.

18. Contractors

18.1 That the CMD crew safety meetings which are currently being held be maintained.

18.2 That:

(a) a formal training program for new

(inexperienced) employees be developed, implemented and maintained; and

(b) experienced employees, newly hired by CMD, be given a formally structured orientation, and their competence regarding equipment operation be formally tested using criteria comparable to those established by DPPC, and licenses issued.

18.3 That CMD operations conform to the Loss Control Program of DPPC.

19. Medical Examinations

19.1 That the Occupational Health Nurse be responsible for:

(a) maintenance of all medical records filed at the mine;

(b) arranging all medical examinations required pursuant to the *Occupational Health and Safety Act;* and

(c) maintenance of all audiometric test records.

19.2 That the medical examination program be directly linked to the suggested analysis of all jobs at DPPC, and that the examining physician be provided with all pertinent information regarding the work to be/being performed, and the hazards known to be associated with that work.

20. Union

20.1 That the United Steelworkers of America, and in particular Local 1929, actively support the initiatives of DPPC designed to improve the Occupational Health and Safety Program at the mine.

21. New Brunswick Occupational Health and Safety Commission

21.1 That all Commission policies and procedures be reviewed to ensure that they provide clear direction on all aspects of the interpretation, administration and enforcement of the Act and Regulations, and that consideration be given to the establishment of standardized forms for notification of non-compliance etc.

21.2 That the training programs for Safety Officers be reviewed to ensure that they address a standardized approach to conducting inspections, investigations and the documentation of same, and that the training also provides exposure to court procedure and the requirements for providing documents in support of proposed legal action.

21.3 That Safety Officers, and the Director of Inspection Services, be trained on the Loss Control system.

21.4 That Safety Officers be provided with ready access to a broad spectrum of current occupational health and safety information.

21.5 That Safety Officers are provided with training on how to assess and improve training programs, and how to present training material using modern adult education techniques.

22. Twelve-Hour Shifts

22.1 That the New Brunswick Occupational Health and Safety Commission consider all applications for deviations from the requirements of the *Mining Act*, Regulation 77-58, Section 17, on the basis of conformity with Section 18(10) of the said Regulation.

SAFETY POLICY

At the time the inquiry was convened DPPC had a safety policy which read as follows (Exhibit #6):

POLICY STATEMENT
ON SAFETY AND HEALTH

Denison-Potocan Potash Company is firmly committed to establishing, promoting and maintaining a safety program that will sustain a safe and healthy work environment and to ensure that people work safely. In making this commitment, we believe that each employee has the responsibility to work in such a manner as to safeguard himself, fellow employees and the assets of the Company.

Accidents, whether they result in personal injury, industrial illness, damage to property, or any other form of loss must be avoided. It takes the participation of all employees to eliminate accidents in order to make the safety program effective.

Everyone, at all levels of the organization, is encouraged to work safely and to consider safety in the performance of every job.

I.N. Duke
September 1987 General Manager

The ILCI audit of September 1989, conducted by Mr. M. Crucefix made reference to the DPPC safety policy statement as follows:

pp 2. 1.1 1.

"The safety policy statement effectively communicates the General Manager's commitment to the program for protection of people and property."

The audit report suggestion for improvement, was that the safety policy be expanded to include fire losses and compliance with legislation.

The amended safety policy was submitted to the Inquiry as Exhibit #54, and reads as follows:

> Denison-Potocan Potash Company is firmly committed to establishing, promoting and maintaining a safety program that will sustain a safe and healthy work environment as indicated by acceptable industry practices and compliance with legislative requirements. In making this commitment, we believe that each employee has the responsibility to work in such a manner as to safeguard himself, fellow employees and the assets of the Company.
>
> Accidents, whether they result in personal injury, industrial illness, damage to property, fires, or any other form of loss must be avoided. It takes the participation of all employees to eliminate accidents in order to make the safety program effective.
>
> Everyone, at all levels of the organization, is encouraged to work safely and to consider safety in the performance of every job.

B. Boivin
February 1990 Vice-President and General Manager

Evidence was given that the new policy statement would be filed with the New Brunswick Occupational Health and Safety Commission and circulated throughout the work force. Aside from the formal Safety Policy, DPPC also had a Policy Statement on Assisting Employees with Life Threatening Illnesses including, but not limited to, cancer, heart disease and AIDS, which I believe shows concern and sensitivity for its employees.

A safety policy is a formal declaration of commitment to the occupational health and safety of all employees. As such, the amended safety policy statement of DPPC is quite adequate and unambiguous, provided that what is considered "acceptable industry practice" is determined by conformity to the applicable legislation, and that the term "employees" is all-inclusive, from the Vice-President and General Manager to the most recent novice miner.

At no time during the Inquiry was evidence given that suggested a lack of commitment to safety on the part of the Company. On the contrary, the President, United Steelworkers of America, Local 9129 stated that the Company appeared to be committed to safety. His concern centered on the application of that commitment (3797). The Loss Control Superintendent, Mr. T. Poulin pointed out that policies are established by top management and that commitment by top management is required if a safety policy is to be successfully implemented (2678). While this is true, the implementation of policy also requires the existence and use of an appropriate structure, program and process, which establishes goals, allocates resources and assigns responsibility in such a manner as to ensure that the commitment to the safety policy is fully addressed. It is in these areas that DPPC experienced the difficulties which led to the establishment of the Commission of Inquiry. Mr. Poulin pointed out that, when he joined DPPC in November 1989 there appeared to be programs in place, but "...they didn't seem to reach up to one person who was responsible, or one person who was in the administrative end. Although it was the Employee Relations Superintendent, to me he was just overworked..." (2681).

The organization chart which was submitted in evidence in November 1989 showed that the Loss Control Superintendent reported to the Superintendent of Employee Relations. The position description for the Loss Control Superintendent indicated that he reported to both the General Manager *and* the Superintendent of Employee Relations on safety matters. Aside from the fact that no person can serve two masters, this arrangement did not place the necessary degree of emphasis on the position of the Loss Control Superintendent, whose major accountabilities included the development and implementation of safety policies, procedures and programs throughout the organization, and the monitoring of such programs. The only subordinates to assist him with these tasks were the Underground Safety Officer, the Fire Chief/Surface Safety Inspector and the Occupational Health Nurse (a new position not yet filled). Add to this the fact that the Underground Safety Supervisor was unable, due to the requirement to perform other duties, to go underground more than an average of two days per week, and that the Fire Chief lacked the resources to enable him to maintain his inspections of underground fire extinguishers, and one is left with the impression that the allocation of resources to what was referred to throughout the Inquiry as the "Safety Department" was in the past insufficient to meet the needs of the mine.

This is certainly the view taken by the Union and workers. I do not believe that the Company intended safety to be treated as anything other than a priority, but the necessary organizational and resource allocation steps were not taken to fully implement that commitment.

The Company has in the past few months finalized an agreement with the Union for the employment of a full-time Union Safety Inspector. This position is financed by the Company and filled by a candidate chosen by the Union/workers, with final approval of candidate choice resting with the Company. This must be regarded as a very progressive and positive step by the Company which, as evidence was to reveal, had already resulted in positive cooperation between the Union Safety Inspector and Company officials. It should be noted that at the time of the Inquiry no job description existed for this position, although action on this matter has been promised by the Company.

FINDINGS AND CONCLUSIONS

The evidence heard during the Inquiry satisfied me that DPPC is committed to ensuring that the occupational health and safety needs of its employees are properly addressed, and that the intent was there in the past. The application of that commitment clearly did not satisfy the concerns of the hourly paid employees.

The way in which the commitment of a company to safety is viewed by its employees was perhaps best expressed by the New Brunswick Occupational Health and Safety Commission Safety Officer, Mr. Stuart Cowen.

"The individual at the workface, he judges that company by the individual he deals with and who represents that company." (4017)

Given the recent changes at the mine, most notably the introduction of a Loss Control Program, with the Loss Control Superintendent reporting directly to the Vice-President and General Manager, there is no question that the problems of the past can be overcome.

The Kevin M. Burkett report "Towards Safe Production" (1981) Volume 1 pp. 31/32 states:

> Having established the commitment to safe production, and having made the resource allocations necessary to

> bring safety and production goals into an acceptable equilibrium, the Chief Executive Officer must assign responsibility within the line organization and provide the necessary authority to allow line managers and supervisors to attain the goals which have been set. A clear allocation of responsibilities will facilitate the integration of health and safety policy objectives into organizational activities so that the criteria for the recruitment and training of new employees is defined, the training of employees is carried out, safety awareness and proper attitudes are instilled, relevant data is collected and analyzed and proper work standards developed. In addition, the clear allocation of health and safety responsibilities allows senior managers to attribute performance failures to the individuals responsible.

I believe that the above approach would be of assistance in bringing about the improvements which are necessary at DPPC, and that a Loss Control system is the ideal tool for carrying out this task.

RECOMMENDATIONS

1. Safety Policy

1.1 That the Vice-President and General Manager focus the Company's commitment to safety by playing a lead role in the implementation of the Loss Control Program, ensuring that the program receives full support from all levels of management.

ORGANIZATIONAL STRUCTURE

For an Internal Responsibility System (IRS) to function properly, there must be an appropriate organization structure in place. The organization chart of DPPC (Exhibit #2) sets out the structure of the Company and, in conjunction with the job descriptions for the positions indicated identifies the reporting relationships and responsibilities of those positions. A review of the organization chart and job descriptions showed that, on paper at least, there was some degree of confusion. Specifically, the organization chart was in conflict with some job descriptions with regard to reporting relationships, and there was conflict between job descriptions regarding reporting relationships. I believe, however, that the persons employed in all positions were quite clear as to who they reported to, and who reported to them. Some witnesses, on the other hand, were by no means certain as to exactly what they were responsible for. In some cases the incumbents appeared not to be aware of some of their duties and responsibilities as set down in the job descriptions, while others believed that they had responsibilities (and, in fact, carried them out) that were not reflected in their job descriptions. (Sumner; Campbell; Reid; Wilson).

The major accountabilities of the (underground) General Foremen and Senior Mine Foremen were identical, yet the latter report to the former. The position descriptions of the Senior Mine Foremen indicate that they report to the Mine Superintendent, whereas the organization chart showed them reporting to the General Foremen. The former General Manager could not explain the above-noted problems, nor would one expect him to since he had delegated responsibility for personnel matters to the Superintendent of Employee Relations - who in turn had delegated responsibility for job description maintenance to subordinates. (The Superintendent of Employee Relations was, during this period, also responsible for all occupational health and safety matters, a significant workload.) What was lacking was a structured process which would have ensured that this important task was addressed, and that senior management was provided with periodic written confirmation that all was in order.

Organization charts and job descriptions are much more than mere pieces of paper. They identify reporting relationships, and where authority and responsibilities lie. They are the documented fabric of an organization and should indicate at a glance how the key elements of that organization should interact. In addition, job descriptions are one of the key criteria against which performance targets are set, and results measured. Although the witnesses knew who they reported to they were, as stated earlier, less clear as to their precise duties and responsibilities, and since this vagueness occurred primarily in the areas of supervision (i.e. the fact that two levels of supervision had exactly the same major accountabilities), training, safety, and fire safety, it should give cause for concern.

FINDINGS AND CONCLUSIONS

I conclude that the lack of clarity in this area had, overall, a negative impact on the efforts of the Company to establish and maintain a comprehensive, coordinated approach to the development of safety programs and to address safety issues.

RECOMMENDATIONS

2. Organizational Structure

2.1 That all job descriptions be brought up to date and thereafter maintained either annually or when there is a change in duties; that employees read and sign their job description each time it is amended, and that the Vice-President and General Manager sign all job descriptions.

2.2 That the organization chart be reviewed annually, or whenever an organizational change is made, and that the Vice-President and General Manager sign the current copy which is then posted at the mine, accessible to all employees.

INTERNAL RESPONSIBILITY SYSTEM

COMMUNICATIONS BETWEEN MANAGERS

The evidence showed that there were regular meetings of managers on various topics. These provided ample opportunity for information exchanges, and all managers were aware of these opportunities and availed themselves accordingly. There were no apparent problems in the flow of information on production related matters, or on matters pertaining to engineering, rock mechanics, geology etc. There was ample evidence that managers at different levels in the organization communicated both freely and frequently with each other on a formal and informal basis (DPPC submission of June 20, 1990). The concerns raised by the Union centered not so much on the frequency and volume of communications between managers, but on what was communicated and the priority and distribution given to communications regarding workers safety concerns.

The former General Manger believed that internal communications between managers and supervisors regarding safety issues were adequate. The evidence strongly suggested otherwise. Indeed, one major issue with which Mr. Duke was involved clearly showed that he himself was not well served by a lack of information which he should have received. The Union's letter of October 1988 listed 94 safety concerns raised by the workers at DPPC. In August 1989 there were still 18 items outstanding from the previous year on which the Company had promised action, and Mr. Duke gave evidence that he was surprised to learn that those items had not been dealt with (275/6). He was not apprised of the status of this important matter because of a lack of communication and procedure, not opportunity.

When the Union letter containing the 94 safety concerns was received by the Company it should have triggered a response not only to dealing with those concerns, but also as to *why they had arisen*. The fact that almost one year later some of the concerns on which agreement for action had been reached were still unresolved should have clearly pointed to a deficiency in the flow of information between managers.

The evidence given by the Occupational Health and Safety Commission Safety Officer regarding his being approached by supervisors for assistance in resolving issues they did not wish to take to more senior supervisors is another example of difficulties in the communications between managers (3921). This evidence is further referenced later in this report.

FINDINGS AND CONCLUSIONS

The overall impression derived from the evidence was that, in the past, the IRS was *intended* to be pro-active, but because of the lack of a formal process of checks, balances and standards, it tended to be re-active. An example of this is found in Mr. Duke's evidence where he indicated that he assumed that the Joint Health and Safety Committee's recommendations/concerns were dealt with unless he was informed otherwise (257/9). By way of contrast, he had in place a system whereby he made sure that the orders of the Commission Safety Officer were complied with because the law required it (182). A simple system whereby the General Manager was kept apprised of the recommendations made by the Joint Health and Safety Committee, the dates by which action was contemplated, and written confirmation that such action had been taken—or the reason for delay identified—would have ensured that he was kept fully informed.

There is no question that Mr. Duke knew that the IRS was not working as it should. He wrote memoranda with respect to conducting safety meetings, and during his evidence repeatedly expressed his concern over the degree of confrontation that had existed between workers and management during his tenure, including the confrontation that existed within the underground Joint Health and Safety Committee. He made efforts to deal with this issue. The confrontation persisted however, because his actions appeared to be based on the assumption that the problem originated in the relationships between managers and workers, whereas many of the problems arose through lack of effective communication and consultation between managers. The *result* was confrontation between managers and workers.

RECOMMENDATIONS:

3. Communications Between Managers

3.1 That, as part of the Loss Control Program, procedures be established to ensure that all managers, including the Vice-President and General Manager, be kept fully informed on all matters pertaining to occupational health and safety programs at the mine.

3.2 That the following ILCI critical program suggestions respecting the Vice-President and General Manager's activities and profile be implemented: 1.3 - (1, 2, 3 and 4.)

COMMUNICATIONS BETWEEN MANAGERS AND WORKERS

DPPC'S position was that the problems experienced in the past with the IRS sprang from the tendency of workers not to adhere to the steps of the IRS as set out by the Company (Exhibit 4: and Vol. I, S2.2.9.1, DPPC submission). The four steps to be followed by a worker who has a safety concern are set out in Volume I, S2.2.9.1 of the Company's submission to the Inquiry. In brief, the steps are as follows:

1. If possible, the worker should correct it himself;
2. If that is not possible, he should report it to his shift supervisor who then assumes responsibility for the problem;
3. If the situation is still not rectified, the worker must report it to his crew safety representative and/or to the Safety Department. If reported to the safety representative, it then becomes the latter's responsibility to address the matter with whatever level of management is necessary to have the problem corrected. If the worker has reported the matter to the Safety Department, it then falls on that department to take the matter up with the necessary level of management;
4. If all of the above fail, the matter can be taken to the Joint Health and Safety Committee which reviews the matter and recommends appropriate action to management.

I have some concerns with this process, and they relate to the third step, in which the worker has the option of reporting to *either* his shift safety representative *or* the Safety Department. The former is a part of the *direct* responsibility system, while the latter is not. I firmly believe that DPPC policy on the issue of using the IRS should be that workers should be assured that, if they have received no response or action from their supervisor with regard to a safety concern *after a reasonable period of time in light of the circumstances that pertain to that particular issue,* they may, without fear of retribution, take the matter to either their shift safety representative OR to a more senior level of management in the *direct* responsibility system, i.e. Senior Mine Foreman, General Mine Foreman, Mine Superintendent or General Manager. The shift safety representatives should likewise be assured that they may pursue this same channel if their intercession with the shift supervisor fails to evoke a response.

The role of the Safety Department (hereafter to be referred to as the Loss Control Department) is to play a monitoring role, and should perhaps be advised of the occasions on which it was necessary to refer matters to more senior levels of management *because of a lack of response by shift supervisors*, but I believe that if the IRS is to function properly, the line of *direct* responsibility must be made to function as it should. If there are problems with regard to adequate response from shift supervisors, the Loss Control Department has a role to play in education, training and reinforcement for the supervisors with regard to their role in the IRS. The Loss Control Department, however, has *contributory* responsibility, as does the Joint Health and Safety Committee.

The problem may not always rest with the shift supervisor, but at a higher level of responsibility and, if so, that too should be addressed. A detailed review of the IRS during the Inquiry revealed that, to some degree, shift supervisors had experienced difficulty in obtaining responses from more senior levels of management. Evidence was given by Mr. S. Cowen, Safety Officer, that he had on occasion been approached by first line supervisors seeking his assistance with problems that they had referred to their superiors, but from whom they had received no satisfactory response (3921). Evidence was also given that some supervisory staff tend to refer to the Loss Control Department (using the Neil George Safety System) problems addressed to them by workers. This indicates to me either a misunderstanding on the part of the supervisor respecting the role of the Loss Control Department in the IRS or, possibly, a lack of confidence that they can obtain results by themselves referring matters to more senior levels of management.

To involve the Joint Health and Safety Committee in daily safety concerns *before* matters have been pursued through the direct responsibility system is to invite involvement with fix-it issues, a problem which has plagued the underground Committee at the mine for some time, and is now being addressed. The Committee should only become involved if all attempts to address concerns through the direct responsibility system fail. I do believe, however, that the Committee should be kept apprised of the frequency with which workers have to take problems beyond the first level of supervision. Mr. J. Greenhalgh, (former Manager of Operations) expressed the view that "Safety is a line responsibility" (1776). I agree with this view inasmuch as dealing with daily safety concerns is *first and foremost* the responsibility of those in the *direct* line of responsibility.

A number of other DPPC management witnesses expressed the view that the workers at DPPC circumvented the IRS. These included:

Mr. L. Duke, (former) General Manager (157; 240/1)
Mr. J. Greenhalgh, (former) Operations Manager (1785/8)
Mr. S. Hodgson, Mine Superintendent (595; 680)
Mr. W. Marshall, General Mine Foreman (770/71)
Mr. M. McDonald, General Mine Foreman (728/9)
Mr. E. Hamilton, Senior Mine Foreman (1295/6)
Mr. R. Campbell, Underground Safety Supervisor (2259/60)

Two shift supervisors who gave evidence (Mr. Claude Grenon and Mr. Richard Archibald) both testified that they had no problem with their crews circumventing the IRS. I do not believe that it is any coincidence that they were both enthusiastic in their use of the Neil George Safety System which, when used properly, deals with safety problems promptly and in full consultation with the worker.

During examination and cross-examination, Duke, Greenhalgh, Hodgson and Campbell testified that they were aware of workers' complaints that shift supervisors were not responding to safety concerns addressed to them. There was extensive evidence on the degree of confrontation and mistrust that existed between the workers and supervisors, and the view was expressed by more than one management witness that the prime cause of this mistrust was the complexity of the ore body, and the frequent changes in mining methods, procedures etc. the problems with the ore body made necessary. Management witnesses also expressed the view that the Commission Safety Officer, Mr. S. Cowen, involved himself too much in the IRS and was "used" by the workers as a means of dealing with concerns which should have been addressed to their supervisors. The role of the Safety Officer will be addressed later in this report. Mr. Greenhalgh stated that when he arrived at DPPC in January 1989, the IRS was not working (1783). A review of the evidence convinces me that he was correct in his assessment. The workers and the Union also believed that the IRS was not working. The dispute arises over *why* this was the case.

The Union Safety Inspector (Mr. R. Feltus), the Union President (Mr. T. Harris) and workers who gave evidence all stated that when "circumventions" of the IRS were undertaken by workers, it was only *after* they had addressed their concerns to the shift supervisors but had received no response. This confirmed the evidence given by Campbell, "A lot of time it takes so long that he'll hear an answer to things, so the worker will take it upon himself to try to find the answer for himself." (2322).

Mr. Campbell, while he thought the workers circumvented the IRS, also testified that the men expressed both to him personally and at crew safety meetings their frustration at not having their safety concerns addressed by their supervisors. He stated that he believed this was the source of the mistrust and confrontation (2268/70; 2276/78). Mr. Cowen testified that 90% of the problems referred to him by workers had previously been discussed by the workers with their supervisors (3921/22;4067), and that only rarely would that not be the case.

The Neil George Safety System is key to the issue of how the IRS should work, and a great deal of evidence was heard on this topic. The safety cards which are to be filled out by the worker and his supervisor on every shift identify safety concerns and, if the system works as *intended,* should prevent the problem of workers' concerns going unaddressed. This, obviously, would remove what appears to have been the prime motivation for workers going to other than the supervisor to receive attention to their safety concerns. In my opinion, if a worker identifies a safety concern on his safety card, and discusses it first with his supervisor, he is adhering to the system as intended. If he does not do either, he is circumventing the system. The same criteria apply to the supervisor. If he notes the concern (verbal or written by the worker) and acts on it, he is conforming to the IRS. If he does not act—and inform the worker of his action—he is not conforming to the system.

The Neil George Safety System provides a documented, systematic approach for dealing with safety concerns which, if it had been properly followed at DPPC would have prevented many of the communications problems which arose between workers and supervisors at the mine. I do not believe, however, that this system *on its own* would have—or will—resolve all of the issues which have given rise to the mistrust and confrontation at DPPC. It is, however, central to the IRS. The system is designed to promote on-the-job safety awareness and accident prevention. It was strongly supported by all witnesses. The five points of the system require conscious safety awareness and daily acts of safety by both workers and supervisors. The five points of the system were changed to six points at DPPC, (3 (a) and (b)) but it was generally agreed by all parties that the change does not detract from the effectiveness of the system.

The five points are:

1. Is the entrance to the workplace in good order?

2. Are workplace and equipment in good order?

3. (a) Can I continue to work safely?

The worker is required to answer the above.

(b) Are men working properly?

4. Do an act of safety.

5. Can and will men continue to work safely?

Did I apply all 5 points of the Safety System?

The supervisor is required to respond to 3(b), 4 and 5 and, having signed the card, ensure that it is filed with the Loss Control Department at the end of the shift.

It is readily obvious that if the above approach is used at the outset of every shift, safety issues are being addressed as they should, for the worker is required to deal with any safety problems which confront him, provided he has the means and ability to do so, and those that he brings to the attention of the shift supervisor are to be addressed without delay by that supervisor.

General Foreman McDonald and Marshall both testified that they liked the system and thought that it worked well. They did "spot" checks to ensure that the cards were being completed. Senior Mine Foreman Hamilton also felt that the system was working well. He felt that workers should deal with "fix-it" items rather than enter them on the cards, and agreed that more training on this aspect would help (1293/4). Shift Supervisor Archibald was an enthusiastic user of the system, and explained in detail how he applied it. He also stated that he found very few "no" responses on his crew's cards. New employees Mercer and McLean both expressed their appreciation for the system, and stated that it was well applied by their supervisors. Similarly, AM 100 operator Vail stated that he experienced no problem with the system. Another employee, Mr. Lemaire, stated that only one shift supervisor out of four would complete and sign the safety cards and give the safety talk when they were supposed to (3386).

The Union Safety Inspector, Mr. R. Feltus gave evidence that he had been monitoring the use of safety cards since August 1989, and was concerned at the low percentage of cards returned, and also at the fact that, of the cards returned, a number were not properly completed. The deficiencies related to omissions by both workers and supervisors. He also stated that some supervisors referred safety problems to the "Safety Department" for action. He stated that he wrote to the Mine Superintendent regarding his concerns (3012 - 3017). Mr. Feltus made it very clear that he equates the Neil George Safety System with the IRS and sees them as one and the same. He stated that in general his survey showed that returns from "production" areas were good, and that the problem arose mainly with maintenance crews.

The Underground Safety Supervisor, Mr. Campbell, taught the Neil George Safety System to new employees during orientation and to persons receiving training as supervisors. He confirmed that the shift supervisor is responsible for ensuring that the five steps are all addressed, and for filing the card with the Loss Control Department. He also confirmed the evidence of Mr. Feltus regarding the poor returns of cards over the period monitored (at one point as low as 46% were returned), and that it was both workers and supervisors who were not completing their parts of the cards (2252;56). He outlined how he and Mr. Feltus monitored the cards, and tried to follow up on the issues raised on the cards. Mr. Campbell also stated that on occasion he would speak to supervisors regarding some of the problems referred to him, advising them that it was a "direct line" responsibility to address such matters. Mr. Campbell was asked to rate the four crews in terms of degree of confrontation that existed. The crew he rated most confrontational was also the crew that registered the most safety concerns on their cards (2308). He stated that he considered all of those concerns valid (2400).

The Union President, Mr. T. Harris, conceded that he did not always fill out his card, and gave as a reason the fact that he worked different shifts to his supervisor, so there was no one there to sign it. He also agreed that there are mechanisms which can be put into place to address circumstances such as this and that it behooved him to pursue the matter further in order that *all* workers can comply with the system.

FINDINGS AND CONCLUSIONS

The IRS was not functioning as it should at DPPC. The direct responsibility system was being circumvented by both workers and supervisors, but as the exception rather than the rule. Based on the evidence placed before the Inquiry, one cannot place the responsibility for that failure on the workers or, necessarily, entirely on the shift supervisors. In my opinion, the evidence clearly suggests that the workers did as a general rule address their safety problems to their supervisors as is required. The evidence also suggests that any circumvention by the workers was as a result of frustration at not receiving responses or action regarding safety and maintenance problems. The circumvention on the part of supervisors occurred either as a consequence of not obtaining an adequate response from their superiors, or through improper use of the Neil George Safety System to refer problems to the Loss Control Department.

The complexity of the ore body was indeed a factor, but only inasmuch as it required a level of understanding of ground control by shift supervisors and workers that had not been fully addressed by the Company through training programs, or the implementation of ground control standards and procedures.

Why the workers did not receive responses to the degree the evidence suggests used to be the case, may be due to a number of factors which include:

- inexperience on the part of some supervisors.
- lack of follow-up at more senior levels of supervision.
- inconsistent application of the Neil George Safety System.
- a lack of awareness as to how the IRS should work (on the

part of both worker and supervisor).

- lack of appropriate training of both workers and supervisors.
- problems with maintenance (McDonald, 727).

Other indicators are found in the ILCI audit of September 1989, such as the following critical program suggestions:

1.9 (2) the need for a manager's written procedure for handling and following through on employees' reports of safety and health hazards.

3.3 (1) Development of an inspections follow-up system.

3.8 (1) That supervisors should follow-up on items reported by employees, get prompt action and provide feedback.

15.1 (1) A program should be developed to train supervisors and other employees who give job instruction, in personal communications.

The shift supervisor's role as the "point of contact" with the workers is critical. Supervisors are required to provide leadership, example, guidance and instruction in order that the work may proceed safely. In turn they require cooperation from their crews and, when required, support and assistance from more senior levels of management. If the IRS is to function as it should, supervisors must ensure that the Neil George Safety System is followed *without exception*. Trust between the supervisor and worker will only develop if the supervisor demonstrates that he has the knowledge and experience necessary, and if he has the required communication skills. The ILCI definition of communications is "What we do to give and get understanding."

Trust is engendered by a free flow of information between worker and supervisor, with the former being frank about his concerns and the latter not only addressing those concerns but doing so promptly *and advising the worker of the course of action being taken*. Silence is invariably construed as indifference. Although there was evidence that this essential relationship of trust had broken down in some instances at the mine, it was quite clear that some supervisors communicated very well with their crews, and enjoyed their trust and respect—mutually returned.

The worker also has an important role to play in the IRS. He must conform to established standards, procedures and rules, and at all times ensure that his acts will not knowingly endanger himself or any other person. In carrying out these responsibilities, workers are obliged to refer to their supervisor *as a first step* all work-related issues and, if necessary, remind him that action is required. Matters should not be held back until the worker attends a crew safety meeting, or until the Safety Officer inspects. As Safety Officer Cowen pointed out, supervisors have the usual human frailties and are subject to a number of demands during the course of a shift. Workers are also responsible for completing their part of the safety card *without exception* and ensuring that they are given to their supervisor. Further, any safety concern that can be dealt with by the worker should be, and without delay.

RECOMMENDATIONS

4. Communications Between Managers and Workers

4.1 That DPPC review the "4 steps" of the IRS in order to reinforce the concept that the DIRECT responsibility system must be used to deal with safety issues, and that a policy statement be issued affirming the Vice-President and General Manager's support for that approach. This statement should provide his assurance that workers and crew safety representatives can, when necessary, pursue matters through the IRS without fear of retribution.

4.2 That training for all staff regarding the IRS be enhanced, with emphasis on the Neil George Safety System, and that a procedure ensuring follow-up and reinforcement of the training be developed, including the auditing of the safety cards by the Loss Control Department.

4.3 That the Union reinforce with its members the importance of conforming at all times with the IRS, and in particular with the Neil George Safety System.

JOINT HEALTH AND SAFETY COMMITTEES

The Joint Health and Safety Committee forms an essential part of the IRS in a contributive capacity, and is unique because of its bipartite nature. Few workplace agencies have been as intensively studied, or have provided for as much discussion. The reports of the Ham and Burkett Commissions; the Standing Committee on Resources Development (Ontario) and the Advisory Council on Occupational Health and Occupational Safety Committees (Ontario) all stress the importance of joint occupational health and safety Committees in the workplace. **The Occupational Health and Safety Act** of New Brunswick makes provision under Section 14 for the establishment of joint occupational health and safety Committees and sets out criteria for membership, chairmanship, frequency of meetings, maintenance of minutes and pay for employees when attending meetings etc. Section 15 sets out the legal obligations of the Committee.

Evidence was given that the two Committees at DPPC conform to the Act. Some questions were raised regarding the newly formed CMD Health and Safety Committee and will be discussed in this report. Until recently there were two Joint Health and Safety Committees at DPPC, one in the mill and one underground. The formation of the CMD Committee brings this total to three.

The DPPC position is that, in general, the Committees at the mine work well. There was acknowledgement that there had been problems with the underground Committee, but that these were well on the way to being resolved. Recent improvements include:

- separating the monthly inspection from the meeting. It is hoped that this will address the chronic problem experienced by the underground Committee spending most of its time on "fix-it" items.

- more training for Committee members and crew safety representatives. It was readily conceded that the Company had the responsibility for training Committee members and crew safety representatives, but the Company felt that the Union also had a role to play by providing some degree of support and training.

The Company felt that the practise of the previous worker co-chairman (Hoddinott) of holding meetings of the crew safety representatives (away from work, on their own time) had proved beneficial, and suggested that the current worker co-chairman resume this practice. The Company also felt that the Committee meetings had, in the past been confrontational and that this did not serve the purpose for which the Committees were created.

Another concern expressed by DPPC was that the Joint Health and Safety Committees not become politicized, which in their view would be the case if Union executive members were permitted to become members of the Committee. It was conceded by DPPC that no evidence had been offered during the Inquiry to suggest that either of the Committees had become politicized in this manner, but DPPC counsel quoted the Burkett Report (70/71) in support of their concern, and a number of witnesses (management, worker and Union) agreed that labour relations and safety issues should be kept separate, and that the Committees should not become involved in labour relations matters.

The Union's position was somewhat different. It agreed that the focus of the Committees had been on "fix-it" items, and pointed that the Ham Report found this to be a common failing. The Union also quoted the Burkett Report which stresses the importance of openness and consultation with workers if such Committees are to succeed, and which gives four reasons why Joint Health and Safety Committees fail, as follows:

- the fact that the (Ontario) legislation tends to move the focus for the resolution of workplace anomalies from the direct responsibility system to the Committee (62/69);
- the adversarial mentality that Burke believed would prevail if those who served on the Committee served also in some other aspect of the Union-management interface (70/71);
- management's reluctance to engage in open consultation on the full range of health and safety issues (73/75);
- the fact that Joint Health and Safety Committees have not been accorded appropriate status through the provision of adequate time and resources with which to address their responsibilities (77/79). (It should be noted that the Burkett Report pointed out

that a lack of training for Committee members also contributed toward the failure of Committees (71/73).

The Union pointed out that the 1986 report of the Ontario Advisory Council on Occupational Health and Occupational Safety questioned the findings of Ham and Burkett regarding the politicization of the Committees (xiii). It was submitted that fundamental changes are required in the constitution of the Committee, as follows:

1. greater involvement, recognition and training of crew safety representatives in the functions of the Committee; and

2. improved communications with all departments at the mine to ensure the Committee's contribution, but most notably with the Safety Department.

The view was expressed that it would be to the benefit of both the Company and the workers if the crew safety representatives enjoyed greater participation on the Joint Health and Safety Committee. The Union also pointed out that the role of the crew safety representatives was poorly defined, and suggested that they have further training and be permitted to meet jointly at intervals on Company time. The success of the training for Joint Health and Safety Committees carried out in the past by the New Brunswick Occupational Health and Safety Commission was acknowledged.

Finally, the Union brief suggested that the three basic elements which must be in place for the Committee to succeed are:

- knowledge
- involvement
- resources

The ILCI audit of September 1989 (pp 2, 1.11) stated that the Joint Health and Safety Committees were functioning well. This would appear to have been true of the Committee in the mill in some measure, but the evidence given during the Inquiry by both management and worker witnesses very clearly indicated that the one in the mine was not functioning well. The ILCI critical program suggestions, (pp 6, 1.11 - (1, 2, 3, 4)) all directly address some of the problems which have been experienced at the mine.

The evidence given at the Inquiry provided a meaningful insight into the work of the Committees and the problems they had experienced. Mr. S. Hodgson (Mine Superintendent) was appointed management co-chairman of the mine Committee in August 1989. He gave evidence that the Committee had in the past been confrontational devoting most of its attention to "fix-it" items, but that in recent months the situation had improved. His evidence on the delay encountered in responding to Committee recommendations was simply that it took time to coordinate all the required elements needed to address them. Overall, Mr. Hodgson acknowledged that there had been problems, but he felt confident things were improving.

Mr. J. Greenhalgh, former Operations Manager, and Mr. W. Marshall, General Foreman, all acknowledged that the mine Committee had been confrontational and that the emphasis on "fix-it" items had resulted in a fault-finding rather than fact-finding approach. Mr. Greenhalgh believed that training for Committees would help, while Mr. Campbell, (Underground Safety Supervisor and secretary to the mine Committee) and Mr. Marshall testified that the delay in responding to Committee recommendations had contributed to the confrontation.

The worker Co-Chairman of the mine Committee, Mr. K. McCaig, had received some training for his role, and of the five courses he had attended since October 1988 three were financed by the Company and two by the Union. His description of the Committee conformed to that given by Mr. Hodgson and he confirmed that the past practice of conducting the inspection tour in the morning, and holding the meeting in the afternoon of the same day had contributed to the Committee becoming preoccupied with fix-it items. He gave evidence that *if he and the management co-chairman could not agree on whether or not a specific issue was a problem or if they could not agree on a solution, nothing would be recorded in the minutes on that item.* This evidence was subsequently confirmed by Mr. Hoddinott, the previous worker co-chairman. This indicates to me a lack of understanding by both management and worker co-chairmen of their role, and of the importance of maintaining proper records of all issues discussed by the Committee. The principal problems identified by McCaig and Hoddinott were the delay in getting action on the recommendations; the fact that at times the results obtained did not conform to what had been recommended; the lack of consultation with the Committee regarding developments or action on the recommendations, and that there was no proper procedure in place to ensure that the above-noted problems did not arise.

Mr. McCaig also expressed the view that there should be greater opportunity for the involvement of the crew safety representatives in the work of the Committee, that an increase in the size of the Committee would make this possible and that they should be provided with the opportunity to meet with each other on Company time. The matters on which he believes the Committee should be consulted included the implementation of the Loss Control Program, the setting of workplace standards, job/task analysis, establishing safety procedure, and inspections (3183; 3208/10). In response to questions raised by Company counsel, Mr. McCaig conceded that he had had the opportunity to raise some of his concerns regarding the functioning of the Committee at the quarterly meetings with the Vice-President and General Manager, but had not done so.

The management co-chairman of the mill Committee, Mr. R. Nylen, was supportive of the Committee's role, as was evidenced by the fact that the Committee had in place a somewhat better approach than was the case in the mine. (Mr. S. Cowen, Safety Officer, had indicated in a report that the mill Committee was functioning well (2227/8). The mill Committee was consulted on safety matters such as the emergency procedures manual (2128) and there was in place a system of follow-up on the recommendations of the Committee. One received the clear impression from Mr. Nylen that he saw the value of the Committee and tried to ensure that it functioned properly.

The worker co-chairman of the mill Committee, Mr. E.S. Price, had experience as a Joint Health and Safety Committee co-chair before working at DPPC, and it seemed obvious to me that this had proved helpful. He expressed himself as a firm believer in keeping safety matters non-confrontational and gave examples of how he tried to achieve this (3631/8). He expressed strong appreciation for the August/September 1989 seminar on Joint Health and Safety Committees held by the New Brunswick Occupational Health and Safety Commission. He has raised matters at the General Manager's quarterly safety meeting (a recent and very positive innovation) and saw such meetings as helpful (3687/9). He had asked to be allowed to attend monthly crew safety meetings and had been permitted to do so, which he also found very helpful, and said;

> All I'm doing is looking to smooth things out so the employees feel we're doing the job they want us to do, so they understand the job we're doing, and take this bickering and fighting out of our safety and make it a working unit. And if I can get the employees to understand and support us, the chances of accomplishing more are better. (3637/8)

Recent changes with regard to how the mill Committee functions were referred to by Mr. Price as "...unbelievable improvement..." (3635)

Mr. S. Parks gave evidence that he had been a crew safety representative for years but had resigned because he could not get responses from management on the workers' concerns (3443/7). He described crew safety meetings where input on safety issues was requested (in writing) from the workers. The men provided the input but no responses were ever received. His evidence on this matter was not disproved, but he conceded to Company counsel that he did not avail himself of the opportunity to pursue these safety concerns further with the Joint Health and Safety Committee worker Co-Chairman.

Mr. J. Choi, Project Manager at DPPC for CMD, gave evidence that when the mine first began operating, CMD had the only Joint Health and Safety Committee, but as DPPC became the major employer in the mine, the CMD Committee ceased to function and the DPPC one replaced it. For quite a period of time CMD was represented on the DPPC Committee by crew representatives, but sometime in 1988/1989 his men stopped attending the DPPC mine Committee meetings because they were"...not invited to participate." (4212/4). He stated that he had recently *appointed* a Committee but intended to hold elections for worker positions on the Committee within a month or two. Mr. Choi also indicated that he had recently initiated group meetings of all CMD crew safety representatives—on Company time—and that on occasion he brought men in for such meetings on their days off and paid them for the time (4250). He stated"...overall I think I'll continue that one even though there is some sacrifice in our productivity" (4249). He emphasized the importance of the two mine Joint Health and Safety Committees coordinating their activities.

The New Brunswick Occupational Health and Safety Commission Safety Officer, Mr. S. Cowen, believed that the Committees should adopt the role intended for them by the legislation. In his view they should be addressing matters such as the development of safety policy, standards and procedure, as well as carrying out the audit role implicit in the monthly inspections, and supported the concept of full consultation between the Loss Control Superintendent and the Committees in the implementation of the Loss Control Program. He confirmed that the most probable cause of the conflict and confrontation which had plagued the mine Committee in the past was the frustration experienced in getting things done. In his view this would largely be eradicated by separating the monthly inspection from the meeting, as is now in place with both the mill and mine Committees (3967/50; 4005). With regard to the inspections he carried out at the mine, he expressed the preference that both co-chairmen acCompany him as well as the crew representative who is chosen to go, and that the latter join the inspection group on surface, *and be allowed to attend the meeting which follows the Safety Officer's inspection* (3953). He stated that continuity would be better served in this way. He also pointed out that at a nearby mine both co-chairmen always acCompany him on his inspections. He suggested that training of Committee members is important, and should include topics such as ground control, gas testing and general training on the role and function of the Committee.

FINDINGS AND CONCLUSIONS

The Joint Health and Safety Committees at DPPC were not working as intended (by both parties) although the one in the mill appears to have been reasonably successful. The reasons given by the Burkett Report for the failure of Joint Health and Safety Committees can be identified at DPPC, and the type of problems which arose have all been identified in the reports and studies referenced earlier.

The decision to establish a separate Committee in the mill was judicious, and the mill Committee has to some degree avoided the "fix-it" trap by separating the monthly inspection and the meeting by a period of one or two weeks. In addition, there is in place a system of follow-up on recommendations. The mine Committee, on the other hand, had become preoccupied with "fix-it" items and did not have a good follow-up system. This seems to have led to a great deal of frustration and confrontation. Recommendations would be made by the Committee and months would then elapse with no feedback as to what action was being taken. That is not to say that action was not being taken, but that the worker Committee members were not kept informed. Examples include the recommendations regarding reviews of the Right to Refuse process, stop ropes on conveyor belts, and lock-out procedures (Hodgson 653/8; 661/4).

The Burkett Report (61/62) comments on the problems which Committees encounter when they emphasize their role in the correction of problems in the workplace, as follows:

> Health and safety committees which are primarily concerned with the identification and correction or workplace anomalies carry with them the potential to foster negative worker attitudes and to reinforce the adversarial mentality. We view the adversarial mentality as both a cause of committee failure and a result of that failure. It is a cause insofar as its existence prevents the openness necessary for meaningful consultation. It is a result of committee failure insofar as it tends to pit worker against management. If a committee deals with worker-initiated complaints to the exclusion of other activities, the worker and his representative find themselves in the ongoing role of initiator and management finds itself in the ongoing role of responder. In the absence of defined tasks and consultative activities, the participants are denied the opportunity to work together in a problem-solving mode. If a committee operates at the pragmatic level, the roles played by the respective participants invite an adversarial approach. Even if management is receptive to employee-initiated complaints and responds promptly (which is not always possible), a committee operating without consultation on substantive issues misses the opportunity to improve worker attitude. Moreover, where meaningful consultation is absent, the more likely result is the fostering of negative worker attitudes.

In my view, the true role of the Committee has not been fully understood by either party, nor its potential as a positive influence at the mine realized. I believe that there have been four factors influencing the Committees at DPPC for some time. They are:

1. the failure of the IRS to deal with the kind of issues the Committee found themselves addressing. This resulted in workers—and to some degree supervisors—turning to the Loss Control Department (Campbell and Feltus), the Health and Safety Committee and the Commission Safety Officer for resolution of their problems;

2. the lack of a system which would have ensured that not only were recommendations dealt with as expeditiously as possible, but that Committee members were kept informed as to the progress of such action;

3. inadequate provision for consultation and involvement on issues other than "fix-it";

4. insufficient training for Committee members with respect to their duties and responsibilities.

The Burkett Report (60/61) comments further on the latter point as follows:

> The establishment of a health and safety Committee structure sets in motion a series of human interactions and creates expectations among workers and management. It follows that the manner in which a health and safety Committee conducts itself is extremely important. If there is openness, if consultation is meaningful, if workers are involved in a range of health and safety issues and can realistically view the Committee as a means of affecting the manner in which, and under which, work is performed, the impact will be positive. If consultation is superficial, however, worker frustration and a reinforcement of the adversarial approach will ensue.

Mr. Poulin's evidence shows that in the early months of 1990 a number of decisions were made with regard to safety policies and procedures without prior consultation with the Joint Health and Safety Committees (2838/9; 2856/73). This simply does not fit with the Company's expressed view that the Committees should be addressing the development of safety programs, procedures etc. rather than "fix-its". I understand the necessity of first explaining what is involved in a Loss Control Program, but thereafter prior and full consultation should be an integral part of program development.

The legislation sets out under Section 15 of the **Occupational Health and Safety Act** the intended role of a Joint Health and Safety Committee. The evidence shows that the Committees at DPPC have done little other than conduct inspections, carry out investigations as required, and respond to safety concerns which, in many cases, should have been dealt with under the direct responsibility system. This is a fact, not a criticism.

The crew safety representatives are a part of the Joint Health and Safety Committee. The system in place at DPPC is such that they take it in turn to sit on the Committee i.e., take part in the monthly inspection and meeting. This can in effect mean that any one crew safety representative may only participate once per year. I believe very strongly that the role of the safety representatives should be given full recognition by both their fellow workers and management. They carry some significant responsibilities in the direct responsibility system such as:

- they are part of the Right to Refuse process.
- they participate in the incident recall process.
- they are the person to whom workers are required to turn if they do not receive satisfaction from their supervisor regarding a safety concern.

This role recently received recognition from the employer in that additional training is planned for the crew safety representatives, a significant step. If some provision cannot be made for these men to attend Committee meetings more than is currently the case, however, the Committee becomes virtually a three-person unit, with a different fourth member (the crew safety representative) attending each meeting. One can hardly regard this as being an effective Committee member.. The two options which would resolve this problem appear to be either that the Union appoint one crew safety representative for a set period as Committee member, or for more than one crew representative to be allowed to attend the inspections and meetings, in other words, to enlarge the Committee. Regardless of the approach taken, I believe the matter is of importance and should be addressed. It is interesting to note that the number of members to be appointed to the Committees is determined at the bargaining table as part of the collective agreement negotiations. Both parties would appear to be comfortable with using the labour relations approach to agree on how a non-labour relations oriented committee should be composed.

It appears reasonable to me that crew safety representatives be given the opportunity to meet periodically on Company time and property when one considers the benefits that could accrue to both DPPC and its workers. Meetings such as this held at least every three months would provide opportunity for the men to exchange ideas and information, and would be even more beneficial if followed by meeting with the co-chairmen of the Committee and, if necessary, other staff. The implementation and maintenance of the Loss Control Program could well benefit from this approach.

In support of a Company initiative such as this I believe that the worker Committee co-chairmen should reinstitute the meetings formerly held by Mr. Hoddinott. This would show positive recognition of the crew safety representatives by their peer group. Assistance from the Union in this initiative would also indicate support for the crew representatives.

The importance of the Joint Health and Safety Committee in the workplace cannot be over-emphasized. The creation of such Committees was intended to address the very problems which appear to have persisted to some degree at DPPC, namely, mistrust and confrontation. It is obvious from the evidence that both parties have to look closely at the mandate and intended role of these Committees. The problems encountered are by no means unique to this mine, nor are the solutions. It is encouraging to note the recent changes which have taken place, all of which are positive in nature and should prove helpful. Not the least of these was the appointment to the Loss Control Department of the Union Safety Inspector, whose role in the safety audit function has proven reassuring to the workers and helpful to management. However, they are not the complete answer, and further action is needed if the Committees are to realize their full potential as an agency for positive change, as has proven to be the case elsewhere in industry. In my view, the New Brunswick Occupational Health and Safety Commission could play a significant role in assisting with the training of the Committees, crew safety representatives and supervisors with respect to the role and function of the Committees.

If the Company is willing to acknowledge the status of the Committees by providing the resources, time and opportunity for full consultation and involvement in the health and safety program, it should be met with the full support and commitment of the workers and Union. The legislation provides an opportunity for reasonable people to work together in making the Committee a success. All that is required is the willingness to do so.

RECOMMENDATIONS:

5. JOINT HEALTH AND SAFETY COMMITTEES

5.1. That:

(a) the ILCI critical program suggestions 1.11 regarding the Joint Health and Safety Committees be fully implemented;

(b) implementation of the above ensures that the Vice-President and General Manager receive copies of all Joint Health and Safety Committee recommendations, and that he acknowledge receipt of same in writing;

(c) in implementing the ILCI critical program suggestions, steps be taken to establish proper procedures for the circulation of recommendations and time frames for response, and that the responsibility for this task be carried by the management co-chairman;

5.2. the Committees be given a formal consultative role in the review, development and application of all occupational health and safety matters at the mine including the implementation of the Loss Control Program, and that the role of the Committees as set out in Section 15 of the Act be actively encouraged by the Vice-President and General Manager;

5.3 training and education be provided for all Committee members and crew safety representatives in order that they may properly carry out their responsibilities, and that supervisors also be given training and education with respect to the Committees;

5.4 the Committee co-chairmen be appointed for at least one year and that only in exceptional circumstances are substitutes to attend Committee meetings in the co-chairman's place, and that the minutes of the meetings accurately reflect what transpired, and are posted without delay; and

5.5 both Committee co-chairmen, as a matter of Company policy accompany the Safety Officer on his tours of inspection.

5.6 That:

(a) the responsibilities of the crew safety representatives regarding their role in both the Joint Health and Safety Committee *and* the IRS be defined by the Company and supported by the Union in a clearly worded statement, posted throughout the property; and

(b) provision be made for crew representatives to play a more active role in the Committee through attendance at meetings more frequently; by permitting them to accompany the Safety Officer throughout his inspection, and to attend the meeting that follows; and

(c) provision be made by DPPC for all crew safety representatives to meet as a group at least every three months, and if possible with the Committee co-chairmen with the same frequency.

5.7 That CMD conform to the *Occupational Health and Safety Act* by allowing its workers to elect their members of the Joint Health and Safety Committee and from those members to choose a co-chairman.

5.8 That the Union provide for its members information and educational material to whatever degree its resources will permit in support of the Committees and at all times encourage full support and cooperation with management's efforts on behalf of the Committees, and with Committee members.

5.9 That:

(a) That the New Brunswick Occupational Health and Safety Commission make a ruling as to whether or not the formation of a second Joint Health and Safety Committee underground at DPPC is in compliance with the provisions of the *Occupational Health and Safety Act*: and

(b) That the New Brunswick Occupational Health and Safety Commission play an active role in support of the education/training of Joint Health and Safety Committees and crew safety representatives.

SAFETY PROGRAM

A safety program consists of those activities which promote occupational health and safety and therefore play a role in the prevention of accidents and the occurrence of occupational diseases. The safety program is not solely the responsibility of the Loss Control Department however, but that of all those in the IRS who are able to contribute, be the role direct or indirect.

In the evidence submitted to the Inquiry by DPPC, the Company outlined the safety program as it existed in November 1989. The Neil George Safety System was cited as the cornerstone of the program. Other elements included:

- The accident/incident prevention form (Exhibit 55) which is used in the mill.
- Procedure and safety manuals, all of which were identified.
- An inspections program.
- Emergency preparedness
    - refuge stations.
    - an underground emergency vehicle.
    - a fully equipped first aid station and qualified staff.
    - creation of a new position - Occupational Health Nurse.
    - fire prevention/protection systems and programs.
    - mine rescue teams.
- Reporting of all occupational injuries, and investigations into their causes.
- Safety achievement awards.

In the DPPC submission of June 20, 1990, which summarized all the evidence heard during the Inquiry, the Company listed the following improvements to the safety program:

- Appointment of a full-time Union Safety Inspector.
- The General Manager's quarterly safety meetings.

- Separation of the mine Joint Health and Safety Committee meetings from the Committee's inspection.

- The hiring of a Loss Control Superintendent and the establishment of a separate Loss Control Department with increased staff.

- Commitment to the Loss Control Program involving training of the Union President, the Joint Health and Safety Committee co-chairmen, special training for all crew safety representatives and some training for all workers regarding the Loss Control Program.

- Providing the Union co-chairmen of the Joint Health and Safety Committees with one day off with pay per month to perform associated administrative duties (off-site).

- The commitment to hire an industrial nurse.

- Creation of a second underground training position.

- Creation of the productivity task force.

The Union's submission acknowledges that, with the introduction of the Loss Control Program, the health and safety program at DPPC was changing, but identified a number of issues which had to be addressed. The Union suggested that the role of the Safety Department is"...to enhance health and safety standards whether imposed by regulation or by Company rules and procedures," and listed three means by which adherence is achieved, as follows:

- identifying safety and health concerns in engineering, mine design and acquisition of equipment;

- identifying appropriate work practices which incorporate safety and health concerns;

- assessing compliance with standards through inspections, audits etc.; and

- training and education of all personnel at the mine.

The Union submission then outlined concerns which included the absence of standards; the accident investigation process; the manner in which monthly safety meetings are conducted; the difficulties encountered with the Neil George Safety System; the problems with the Joint Health and Safety Committees (discussed earlier in this report), and emergency preparedness. It was readily conceded that recent changes at the mine had resulted in welcome improvements, one of the most notable being the appointment of the Union Safety Inspector, and the Union also noted that the introduction of the Loss Control Program was also a welcome step provided the Union, Joint Health and Safety Committees and workers are fully involved in and consulted on its implementation.

The following is a review of the principal elements of the Safety Program and recommendations for each one.

LOSS CONTROL PROGRAM

DPPC has taken a number of initiatives over the past year which have had a positive impact. Examples include the appointment of the Union Safety Inspector and the creation of two other new positions, the second Underground Training Instructor and the Occupational Health and Safety Nurse. Three other significant initiatives which will profoundly influence the entire operation are:

1. The International Loss Control Institute audit conducted in September, 1989.
2. The hiring of a qualified Loss Control Superintendent and creation of an independent Loss Control Department.
3. The commitment to implement a comprehensive Loss Control Program.

1. The decision to invite Mr. Crucefix to conduct a Loss Control audit at the advanced level of the International Mine Safety Rating System coordinated by the International Loss Control Institute was, in my opinion, significant, because DPPC must have known that the audit would identify all the areas in which there were deficiencies. It should be borne in mind that the Company did not have a Loss Control Program in place when the audit was requested.

The President of the United Steelworkers of America, Local 9129, was critical of some of the findings of Mr. Crucefix, basing his criticism on the number of workers interviewed, which he states was too few. Since Mr. Crucefix was unable to attend the Inquiry, this particular issue could not be discussed with him.

What I believe to be most important is that the audit did identify in a very thorough manner those areas in which improvement is required, and thereby provided DPPC with clear direction as to *what* must be done. *How* it is done is left to DPPC, and in my opinion the process is a vital ingredient in the recipe for success. For its part, DPPC has clearly indicaed full commitment to implementing all of the critical path suggestions made in the audit. I view this as a very significant and positive initiative.

2. The implementation of a Loss Control Program requires experience and expertise, and DPPC recognized this by hiring Mr. T. Poulin as Loss Control Superintendent in November 1989. The significance of this step was twofold, for it brought to the mine not only a man with the required experience and knowledge, but also one who had not been involved in the confrontation that had plagued the operation for some time. Indeed, Mr. Poulin testified regarding the degree of confrontation that existed at the mine when he first arrived, stating that it was worse than anything he had previously experienced (2644).

   Having hired a Loss Control Superintendent DPPC then made an important change to the organizational structure by removing Loss Control from the Employee Relations Department, and creating a Loss Control Department with the Superintendent reporting directly to the Vice-President and General Manager.

3. The third significant step taken by DPPC was the decision to fully implement a Loss Control Program. The Company has now submitted a critical path plan regarding implementation of the program.

   In the DPPC submission of June 7, 1990, the 20 elements of the Loss Control Program were set out as follows:

   1. Leadership and Administration.
   2. Management Training.
   3. Planned Inspections.

4. Task Analysis and Procedures.
5. Accident/Incident Investigation.
6. Job/Task Observation.
7. Emergency Preparedness.
8. Organizational Rules.
9. Accident/Incident Analysis.
10. Employee Training.
11. Personal Protective Equipment.
12. Health Control and Services.
13. Program Evaluation System.
14. Engineering Controls.
15. Personal Communications.
16. Group Meetings.
17. General Promotion.
18. Hiring and Replacement.
19. Purchasing Controls.
20. Off-the-Job Safety.

Since arriving at the mine, Mr. Poulin has commenced implementation of the Loss Control Program, and DPPC has provided a summary of the steps he has taken:

1. Presentation on Loss Control given to senior management.

2. A three-day session on Loss Control Management given to supervisory staff, Company and Union Joint Health and Safety Committee co-chairmen and the Union President.

3. A presentation on the International Mine Safety Rating System was given to hourly paid workers.

4. A Safety Responsibility Chart has been developed to ensure management responsibility and acton on specific elements of the Loss Control Program.

5. A Program Implementation Progress Chart has been developed as a result of the ILCI critical program suggestions.

6. A presentation on the IRS and the Right to Refuse has been given to workers.

7. In recognition of working without medical aid accidents, "Fireside chats" have been held. These are informal sessions where the workers are thanked for their efforts.

8. The DPPC safety policy statement was revised.

9. Loss Control Manual and management standards were developed.

10. A presentation on job/task analysis was given to the workers.

11. An Accident/Incident form was revised and a lesson plan for instruction in the use of the form developed.

12. An inspection report form was developed.

13. A response to the ILCI critical program suggestions was developed (Exhibit 71).

14. A materials Handling Committee was formed.

15. An Eye Protection Committee was formed.

In addition to the above the Company advised that a second external audit will be conducted during the summer of 1991, as well as internal audits to be carried out periodically by Mr. Poulin. Mr. Poulin (and others) testified that the cooperation and assistance of the Union officers, the Union Safety Inspector, the worker members of the Joint Health and Safety Committee, and shift safety representatives and all the workers is essential if the Loss Control Program is to succeed.

The Loss Control Program currently being implemented at DPPC has the capability of addressing all of the issues this Inquiry was required to review. The program has the support of the Union President, the worker co-chairmen of the Joint Health and Safety Committees and the Union Safety Inspector. Two comments made during the Inquiry indicate how the Loss Control Program is seen by a manager and by a miner.

Mr. T. Poulin, Superintendent of Loss Control stated:

> ...I don't hesitate to say that it's probably the best thing that's going to hit the province as far as industry goes.

> That's mining, or lumbering, or fishing, or anybody else that wants to adopt a management control program... (2916)

Mr. S. Sproul, marietta operator stated:

> ...if we could still contribute to it, like whether it is a good idea to take this thing out or put this thing in, if we could still contribute to that change, I would highly recommend. (3375)

FINDINGS AND CONCLUSIONS

Mr. Poulin states, quite correctly, that Loss Control is a management system. However, as I have already indicated earlier in this report, it will only succeed if there is full consultation with those most affected, the workers. Consultation does not erode management rights or powers. It is a very positive form of communication which leads to understanding and acceptance—yet another bridge to commitment, cooperation and assistance. It is perhaps appropriate to remember that consultation involves deliberation and discussion leading to the making of decisions by management. Informing people *after* the process is simply the dissemination of information. If the Joint Health and Safety Committees, the workers and the Union are properly consulted, I am confident that the program will enjoy success.

RECOMMENDATIONS:

6. Loss Control Program

6.1 That implementation of the Loss Control Program is carried out in full consultation with the Joint Health and Safety Committees, the workers and the Union.

6.2 That the Union and its members offer their full support to the Loss Control Program.

6.3 That the New Brunswick Occupational Health and Safety Commission offer its full support to the Loss Control Program at DPPC.

MINE DESIGN AND ENGINEERING CONTROLS

The ILCI audit (pp 54) states that "Engineering controls are essential for an effective pre-contact method of accident/incident control..." The ILCI critical program suggestions, 14.1, 14.2 and 14.3 specify the improvements suggested for DPPC. In response to these suggestions, the Company has written an organizational engineering policy which forms part of the DPPC Safety and Health/Loss Control Standards Manual. The implementation of the ILCI critical program suggestions noted above will effectively address the need to integrate, in a manner consistent with Loss Control criteria, the engineering controls so essential if a mine is to build safety into all aspects of its development and operation.

The principal issue raised at the Inquiry with regard to mine design was that of the location of the fuel storage area and the refuelling station. Both were originally located on the exhaust air side of the mine, but due to changes in the ventilation system, are now located on the fresh air intake side of the mine, and it was made abundantly clear by worker/Union witnesses R. Feltus, W. Hoddinott, and T. Harris that this is a matter of considerable concern to the workers. The Union President, Mr. T. Harris, testified that he had discussed the matter with the former General Manager and had been promised that the fuel storage area and re-fuelling station would be re-located. Evidence was given by Safety Officer Mr. S. Cowen that DPPC had submitted to the New Brunswick Occupational Health and Safety Commission a detailed proposal for the re-location of these facilities but that this proposal had since been set aside by the Company and that no new proposal had been submitted. Mr. Cowen testified that the Company had installed a full range of fire suppression systems in both facilities in question, and that he considered them safe, but not desirable in their current location. He supports the re-location of the fuel storage area and fuelling station from the fresh air intake side of the mine (4131).

FINDINGS AND CONCLUSIONS

DPPC has well-qualified engineering, geological and rock mechanics personnel, and no evidence was given to question their competence. Evidence was given that they have proved and will continue to prove very helpful in the implementation of ground control standards, procedures and training. The only issue regarding mine design raised was that of the fuel storage area and re-fuelling station. Since fire is one of the most serious hazards one can encounter underground, it would appear to be prudent to deal with this issue, regardless of the current fire suppression systems in place.

RECOMMENDATIONS:

7. Mine Design and Engineering Controls.

7.1 That the ISCI critical program suggestions 14.1, 14.2, and 14.3 be implemented in full.

7.2 That the fuel storage area and re-fuelling station be re-located from the fresh air to the exhaust air side of the mine as soon as can be arranged.

INSPECTIONS

Inspections constitute a vital part of a safety program which, when conducted properly identify occupational health and safety risks and provide an opportunity for immediate remedial action. There are five kinds of inspections carried out at DPPC if one includes (which I most certainly do) the daily inspection of the workplace by supervisory staff and workers as part of the Neil George Safety System. They are as follows:

- Supervisory inspections

These are carried out on a daily basis *and constitute the only daily, mine-wide inspection program*. These are often considered "informal" inspections. I consider them *critical* ones. They are the most important of all since they are the most frequent. The entire mine is covered every day, and they provide an opportunity for the supervisors and workers to discuss what is observed and address themselves to effecting immediate solutions when required. In addition, these interactions provide an opportunity for reinforcement of the proper functioning of the direct responsibility system and implementation of the Neil George Safety System. Implicit in the above interaction is the fact that the worker also inspects his workplace (or any workplace he may be passing through), and that the supervisor has the opportunity to teach workers how and why workplace inspections are performed.

- Loss Control Department Inspections

These inspections are important since they are the Company's "audits" of the workplace, independent of production staff. These inspections are less frequent than those of supervisory or engineering staff, and are usually scheduled so as to visit sections of the mine in turn, covering the entire mine in a given period of time. Inspections such as this are designed to provide a more objective perspective, and to assess how consistently and effectively compliance to standards, procedures, rules and regulations is being achieved.

- The inspections of the General Manager are important for the reasons given on page 3 of the ILCI audit;

"Periodic health and safety tours...provide on-site reviews of the effectiveness of accident control measures. These give line managers and employees access to the General Manager on safety problems. They also give middle managers and safety staff the opportunity to present and discuss loss exposures or remedial actions at their site in the workplace."

- The monthly inspections of the Joint Health and Safety Committees are intended to provide them with the opportunity to assess whether or not work is being conducted in a healthy and safe manner. They also provide an opportunity to indicate to the workers that their representatives have a role in auditing safety performance in cooperation with management.

- The inspections of the New Brunswick Occupational Health and Safety Commission Safety Officer are carried out with a view to ensuring that the mine operates in compliance with applicable legislation. These inspections also provide the Safety Officer with the opportunity to promote safety awareness and provide reinforcement and support for all aspects of the safety program.

The ILCI audit of September 1989 noted the ongoing inspections activity at DPPC and made 26 suggestions for improvement. One paragraph of the audit report expresses very clearly what must apply if a planned inspection program is to be successful.

> Organization is the key to a successful planned inspection program. If general inspections are to be

> conducted regularly and are to be comprehensive in scope and performance, they must be well planned. The areas to be inspected must be analyzed for potential exposures, the frequency of inspection determined to reach an optimum control for effort expended, responsibilities for the completion of the inspections must be set, and then checklists of items to be inspected must be developed. All these must be updated as situations change. The findings must be reported to someone with authority to approve corrections, assign responsibilities for the necessary actions and allocate resources needed to complete the work.

Frank E. Bird Jr. and George L. Germain, authors of the book Practical Loss Control Leadership state that a well-managed inspection program must meet the following goals (pp 121/22):

1. Identify potential problems.
2. Identify equipment deficiencies.
3. Identify improper employee actions.
4. Identify effects of change.
5. Identify inadequacies in remedial actions.
6. Provide management self-appraisal information.
7. Demonstrate management commitment.

Evidence was given by Mr R. Campbell, Underground Safety Supervisor, and Mr. R. Feltus, Union Safety Inspector that they carried out inspections on a regular basis, and that it took approximately two weeks to cover the entire mine underground. Mr. Feltus testified that"...it could take a month or six weeks to re-visit a work area." (3031) Both men expressed the clear understanding that theirs was a monitoring role, not one of enforcement, although Mr. Campbell stated that he had the authority to shut down a heading (or, one would assume, any unsafe operation) if he felt it was unsafe, and that supervisory staff would support his action.

During the oral hearings held on June 20, 1990, evidence was given that both Mr Campbell and Mr. Feltus had the authority to take immediate corrective action regarding any unsafe condition or practice they might encounter. There is, however, no Company policy which specifically empowers them to do this should there be a difference of opinion between them and a supervisor on the issue in question The inspections carried out by Mr. Campbell and Mr. Feltus were not formally scheduled and virtually all of the direction given by Mr. Campbell to Mr. Feltus in this regard was verbal. It would appear that the only formally scheduled inspections which took place at the time of the Inquiry were those of the Joint Health and Safety Committees and the Commission Safety Officer.

Mr. T. Reid, Fire Chief/Surface Safety Inspector, testified that he carried out both safety and fire safety inspections, but that he had no written criteria or schedule for these inspections. Further, his reports were shared only with supervisory staff. Copies were not posted nor were they sent to the Joint Health and Safety Committees (2480).

FINDINGS AND CONCLUSIONS

The inspections carried out by supervisory staff are obviously key to the safe operation of the mine. There was no evidence given to show how these inspections are planned—other than to indicate that they take place on every shift—or how they are documented.

The Joint Health and Safety Committee inspections have, in the past, appeared to deal primarily with "fix-it" items. The proper implementation of the Neil George Safety System should in great measure address the "fix-it" problem, and if as well the ILCI critical program suggestions regarding regular inspections are fully implemented, the impact should be profound, and will doubtless be felt in a very positive sense by the Joint Health and Safety Committees and by those conducting audit inspections for the Loss Control Department.

Inspections, be they planned or "informal" need to have a purpose, a process and a product. The purpose is to carry into the workplace a heightened level of safety awareness which will enhance the identification of potential or actual health and safety problems, and the active promotion of occupational health and safety and accident prevention. The process must provide for proper scheduling, discussion with workers, explanation and assistance in addressing safety concerns, and on-the-spot documentation using standardized inspection forms (and a notebook if required). The product is realized in the form of preventative or remedial action, prompt and appropriate follow-up, and in the identification of the need for changes in methods, procedures, training or equipment in order to ensure that the problems identified are eliminated.

In addition to the above, I therefore conclude that formal training for supervisors, Loss Control staff and Joint Health and Safety Committee members with regard to planning, conducting, and documenting inspections and analyzing inspection results would be helpful.

RECOMMENDATIONS:

8. Inspections

8.1 That the ILCI critical program suggestions 3.1 to 3.9 be implemented in full.

8.2 That training on how to plan, conduct and document inspections be given to supervisors, Loss Control Department staff, Joint Health and Safety Committee members and crew representatives.

8.3 That the inspections of the Engineering Department staff be included in the overall plan/schedule of inspections to ensure proper coordination/cooperation with others carrying out inspections.

8.4 That a policy statement be issued by the Vice-President and General Manager formally authorizing Loss Control Department staff to take appropriate remedial steps to correct unsafe conditions which they encounter.

8.5 That copies of all inspection reports generated be provided to the Joint Health and Safety Committees, the Loss Control Department and posted on notice boards accessible to workers.

GROUP MEETINGS

Group meetings for the purpose of discussing safety related issues form an essential part of the safety program at DPPC. They are, of course, not the only form of communication between the managers as a group, or between managers and workers. Equally important are the daily contacts that take place at the shift cross-over, when workers and supervisors exchange information on events or changes in the workplace.

The presence on the surface during shift changes of engineering staff to provide advice on ground conditions or ventilation is a vital part of the information flow in the mine. Documents such as the Hazardous Log Book and the Ground Log Book also provide information essential to the safe operation of the mine. Over and above this information network, however, there is a requirement for formal meetings at which safety matters can be discussed. The ILCI audit noted the existing efforts at DPPC and made suggestions for improvement which essentially address the establishment of a written standard regarding the frequency, length and content of group meetings. There is also a suggestion regarding the training of supervisors in safety talk techniques (ILCI critical program suggestions 16.1 and 16.4).

The safety-related group meetings currently held at the mine include:

Vice-President and General Manager:

- weekly meetings with department heads.
- monthly meetings with senior staff including senior foremen
- quarterly meetings with Joint Health and Safety Committee Co-Chairmen, Union and managerial representatives.

Engineering Staff:

- bi-weekly and weekly meetings with back-fill, drill-and-blast, and cutting area supervisory staff.

Crew Safety Meetings:

- held monthly by the crew supervisor and attended by his crew.

Joint Health and Safety Committee meetings:

- held monthly: discussed earlier in this report.

Vice-President - General Manager

The former General Manager gave evidence that the weekly and monthly meetings he chaired were held to discuss a wide range of safety-related matters pertaining to the mine. Mr. Duke indicated that "...the direction of the safety program was orchestrated..." at these meetings (173). The decision made late in 1989 to hold a General Manager's quarterly meeting and to invite Joint Health and Safety Committee, Union and senior staff representatives to attend was sound in every sense. It provides an opportunity for the key players to frankly discuss safety matters, to identify real or potential problems and to mutually arrive at satisfactory solutions. These meetings can—and I am sure will—serve the participants well. Mr. K. McCaig and Mr. S. Price, both Joint Health and Safety Committee worker co-chairmen, supported the establishment of the meetings, as did the President of United Steelworkers of America Local 9129, Mr. T. Harris. They all agreed that the meetings could serve a useful purpose (Harris, 3781/3: 3851).

Engineering Staff

Mr. D. Waugh, Superintendent of the Engineering Department, stated that he held the following meetings:

- weekly with the general mechanical, electrical and cutting group foremen. The minutes of these meetings are forwarded to the shift supervisors.
- bi-weekly with supervisory staff of the drill-and-blast, back-fill and cutting groups. The shift supervisors of the drill-and-blast and back-fill groups attend these meetings, but the ones from the cutting area have not been doing so. Mr. Waugh considers this to be a negative factor (1195).

Mr. Waugh described these meetings as ones at which "...we talk about the planning, production in terms of back-fill, what we see, where we see problems and jointly between the two. It's not an operations [Dept.] meeting and it's not an engineering [Dept.] meeting. It's a joint meeting where the communications happens..." He went on to say that the meetings were effective because the shift supervisors were able to have their problem discussed, and solutions agreed upon (1194/97).

Crew Safety Meetings

These meetings are held at least once per month, chaired by the shift supervisor of that particular crew, with other more senior supervisors in attendance if they wish.

Exhibit 7 is a letter from the former General Manager, Mr. Ivan Duke, dated September 1, 1987 in which he instructed his first line supervisory staff to hold a minimum of two 10-minute safety "huddles" per month and that shift supervisors should hold sufficient safety huddles to ensure safety is practised on the job. The memorandum also stated that formal classroom safety meetings were to be held once per month in the mill and twice per month in the mine. The memorandum made suggestions as to preparation, duration and content.

On July 28, 1988, Mr. Duke wrote to all senior supervisors outlining who was to attend the monthly crew safety meetings stressing that proper planning for the meetings was essential and that they be educational and well represented at all levels of the organization. In an apparent response to matters brought to his attention, Mr. Duke wrote a memorandum dated April 27, 1989 in which he presented a specific outline for an agenda. This document received criticism from the Union in that, of the 50-60 minutes scheduled for the meeting, only 10 minutes were allocated for input from the floor (i.e. workers).

Mr. R. Campbell attended a number of the crew safety meetings and testified that they tended to be confrontational. In his view, the confrontation centered on the issue of unresolved items of concern workers had entered on the Neil George Safety System cards (2268/70).

Mr. T. Reid, Fire Chief/Surface Safety Inspector gave similar evidence and stated:

> ...And they'd go from one meeting to the next and there'd be an item that wouldn't be resolved or they didn't know what had happened to their concerns from one meeting to the next and it would...they'd bring it up and if it wasn't done, the foreman would be trying to explain why it wasn't done or the men would want to know why it wasn't done. And it would just turn into a little bit of a confrontation. (2439)

The evidence of workers who testified also indicates that the crew safety meetings were confrontational rather than constructive. Mr W. Vail viewed them as a "battleground" (3423). Mr. S. Parks (a former crew safety representative) stated that the concerns raised at the meetings received no response from management (3443/7).

FINDINGS AND CONCLUSIONS

In my opinion, Mr. Duke's memoranda (noted above) are a clear record of him being well aware of the value of proper preparation, consistent approach and a diversified method of presentation for safety meetings, and indicate a genuine effort to stimulate the positive development of the crew safety meetings. His April 27, 1989 memo laid down a rather rigid format which provided minimal opportunity for input from workers, but I interpret this as an attempt to assist supervisory staff in developing an agenda. It is clear from the tenor of the letters that Mr. Duke knew that the meetings were not achieving their intended purpose, and he had tried to improve the process.

The meetings held by the General Manager and Engineering Department appear to be well planned and effective. This would not seem to be the case with the crew safety meetings which, as the evidence indicates, have not achieved the declared purpose of playing a key and positive role in the safety program. I believe that there are two principal reasons why this has happened, and that a combination of the two eroded the best efforts of Mr. Duke, his staff and the workers to make the meetings successful.

First, the meetings were used by the workers as a means of again raising safety concerns *which had not been addressed by the IRS as they should have been.* The problems identified earlier in this report with regard to the way in which the direct responsibility and Neil George Safety Systems failed to deal adequately with worker's concerns resulted in those concerns being brought to the crew safety meetings, making confrontation virtually inevitable.

Second, specific communication and other skills are required to plan, organize and preside over meetings, and these are not skills one usually acquires while operating a marietta or driving a scoop tram. Most of the supervisors at DPPC have risen through the ranks, and I am not convinced that they have been provided with sufficient training in the skills required for the planning, organizing and holding of meetings as expected by senior management. The ILCI critical program suggestions reinforce my view on this. In implementing the ILCI critical program suggestions, however, it should be borne in mind that not every person placed in a supervisory position necessarily has—or can acquire—the communications and other skills required to carry out this task, and provision should be made accordingly.

The solution to the problem is, quite simply, to address the causes. As the authors of Practical Loss Control Leadership aptly point out, there are guiding principles which support the importance of good communications (which is what the crew safety meetings are all about), and the first of these principles is applicable to the situation at DPPC.

"Motivation to accomplish results tend to increase as people are informed about matters affecting those results."

Crew safety meetings are one means of motivating all employees, provided the meetings are well planned and organized, and are conducted using proven communications techniques.

RECOMMENDATIONS:

9. **Group Meetings**

   9.1 That DPPC implement in full the ILCI critical program suggestions 16.1 and 16.4

   9.2 That shift (and other) supervisors be given adequate training in communications and other skills related to the planning, organizing and chairing of meetings.

   9.3 That worker suggestions for improvement of the meetings be encouraged.

   9.4 That minutes of the crew safety meetings be circulated to the Loss Control Department, the Joint Health and Safety Committees and the crew safety representatives, and are posted for all workers to see.

   9.5 That:

   (a) the first line supervisors from the backfill and drill-and-blast groups attend the bi-weekly meetings arranged by the Superintendent of Engineering; and

(b) **the shift supervisors from the cutter area attend the weekly meetings arranged by the Superintendent of Engineering to discuss the cutting area.**

ACCIDENT/INCIDENT INVESTIGATION AND INCIDENT RECALL

These procedures are an important part of the safety program. Volume 1 of the DPPC submission sets out the accident/incident investigation procedure under Section 9.

- Section 9.2.1 states that every incident must be reported to a shift supervisor during the shift.

- 9.2.2 places the responsibility on the supervisor to conduct an immediate investigation and complete an accident/incident investigation report which is then circulated to the General Manager, the Mine Superintendent, the General Foreman and the Safety Department (Loss Control Department).

- 9.2.2 indicates that the supervisor conducting the investigation is responsible for taking any immediate remedial action required.

- Exhibit 66 is the revised accident/incident investigation report form which has been modified from its earlier format (Exhibit 46) to provide the affected worker opportunity for input.

- Exhibit 67 outlines the lesson plan for training supervisors in the use of the accident/incident investigation form.

Up to this point the Company's position is quite clear; the supervisor and his superiors in the direct line of responsibility have to deal with such matters. Section 9.2.3 however, clouds the issue by stating that the "Safety Department" determines the immediate action to be taken. This point was discussed during the June 20 Inquiry hearing at which time I questioned the Company statement on Page 42 of the June 7, 1990 submission that, "The Loss Control Superintendent, who is the last person to get the form on return circulation, ensures that the corrective action has been taken before filing the form." It was agreed by counsel for the Company that the role of the Loss Control Department in these matters is to *monitor* compliance, not *enforce* it. This is an important distinction that I am still not convinced is fully recognized at the mine. The referral to the "Safety Department" of safety problems entered on the Neil George Safety System cards by supervisors—as testified to by Mr. R. Campbell—gives the impression that the "Safety Department" is held by some to be directly responsible for safety matters. The evidence of Mr. Greenhalgh (quoted earlier) that *safety is a line responsibility* cannot be reinforced too strongly or too often, and any suggestion that the Loss Control Department is responsible for *direct responsibility issues* should be dispelled. I make this point simply because I noted during the Inquiry evidence which suggested that, at least underground, the Mine Superintendent and his staff had played a passive role while the Loss Control Department staff addressed problems which should have been directly addressed by the Mine Superintendent or his subordinates, e.g. monitoring the maintenance of fire extinguishers; and the quality of response to concerns raised on the Neil George Safety System cards, and the percentage of cards returned.

The amended accident/incident investigation form (Exhibit 66) was discussed extensively with the Loss Control Superintendent, Mr. T. Poulin, during cross-examination by Union counsel. It was pointed out that there was no place for circulation of the form to the Joint Health and Safety Committee, and Mr. Poulin agreed that it would serve a useful purpose to amend the form to include the Committees. There was also discussion with Mr. Reid, Fire Chief/Surface Safety Officer on the accident/incident prevention form used in the mill. He gave evidence that he did not consider it his responsibility to routinely review these forms or the log book into which are entered the principal concerns raised on the forms (2483/4). I was surprised to hear this testimony and believe that, as Surface Safety Officer, he should review all documents that pertain to safety issues. Mr. Reid testified also that he insists on an investigation of all fires at DPPC, which is to be expected of the Fire Chief. He then stated that he was NOT automatically informed of investigations into matters where the potential for a fire risk/problem has been identified. He *is* notified of such investigations on the surface (2477/8). Again, I find it hard to follow the logic in this bearing in mind his declared responsibilities at the mine site. He should be kept fully informed on all such matters.

The accident/incident investigation process as presented by DPPC includes only the worker involved, and his supervisor. The exception to this would be if it was a "lost time" accident. Where it is a lost time accident, the crew safety representative is then involved in the investigation. The Company's position is that the accident investigation process is a "fact finding, not fault finding" process (Poulin 2847)

(McKelvey (4300/02). In reviewing the Company position on this, it is useful to examine the role of crew safety representatives in other procedures in the mine. They include:

- lost time accidents.
- incident recall (fact-finding, no-fault exercise).
- Right to Refuse (fact-finding, no-fault exercise).
- step three of the DPPC four-step direct responsibility process.
- sits as a member of the Joint Health and Safety Committee, on rotation.

It appears to me the Company position that the crew safety representatives not be involved in accident/incident investigation on the basis that it is a fact-finding and not a fault-finding exercise lacks consistency when one considers that they are *specifically* required to take part in other fact-finding exercises. Their role in the Right to Refuse process is, one assumes, aimed at resolving the issue as quickly and simply as possible, and that the crew safety representatives' involvement is seen as being positive. If not, why include them? I do not understand why the involvement of the crew safety representatives would be construed as introducing a "fault-finding" approach to an accident/incident investigation, given the reliance on them to do the opposite in other procedures.

The other reason given for not involving them was that the supervisor and worker should be able to resolve matters between them. Bearing in mind that the crew safety representatives are to be given more training (by management), surely they have the potential for providing reassurance to workers (where warranted) in support of the supervisor or, on the other hand, for ensuring that the supervisor is addressing all aspects of the problem. I see this as a way of ensuring that minor problems do *not* become major ones, not the reverse. The incident recall procedure, which involves the crew safety representative, has already proven to be positive according to Mr. Greenhalgh (1785/6), so I fail to see why the accident/incident investigation should be any different. In any event, if it is a lost time accident, the representatives *are* involved, so their exclusion for investigations not involving lost time appears to me inconsistent.

The incident recall procedure was introduced to the mine by the former Operations Manager, Mr. J. Greenhalgh (1806/08). It was described by him as a no-fault, fact-finding exercise which involved the workers *and* *had been seen by the workers as being a positive process.* The procedure is initiated as a result of a lost-time injury or incident that could have resulted in an injury, property damage or high production loss. An incident recall involves the worker, supervisor and the crew safety representative. It seemed clear from the evidence that this process provides for a positive climate of consultation between management and workers in the analysis of accidents/incidents in order to determine how such occurrences are to be prevented. The Union supports this approach. The only concern expressed by the Union was that the incident recall process had not been formalized, i.e. set out in a written procedure. However, the Company indicated that an incident recall procedure is to be written as part of the Loss Control Program standards (2944).

The Company further outlined steps to be taken on the ILCI critical program suggestions 5.1 to 5.8 inclusive. They are:

- Managers have been training in investigation methods and accident cause analysis and a written management directive, expanding the scope of accident investigations, is included in the Program Standards Manual.

- A procedure has been written to guide actions to control accident causes and all accident investigations are filed with the Loss Control Department where a check is made on remedial action.

- A major loss announcement form has been implemented.

- A procedure for providing notification of department heads and the General Manager in the event of an accident is included in the Standards Manual.

- Standards have been developed requiring an accident review meeting and defining which accidents will be investigated.

- Personal injury accidents are analyzed and classified by various criteria and incidents are investigated and analyzed for potential loss.

- Project teams periodically research significant safety problems in the course of accident investigations but this activity is yet to be formalized and documented.

FINDINGS AND CONCLUSIONS

All of the above activity is commendable and will doubtless constitute a major contribution to the safety program when everything is in place and working as intended. A question which begs to be answered, however, is how much consultation took place with the Joint Health and Safety Committees in the development of the new standards and procedures referenced above. It is a question which was addressed at length during the testimony given by Mr. Poulin, already dealt with in the section on Joint Health and Safety Committees. If there was consultation before finalization and implementation, these procedures will doubtless enjoy worker support and cooperation. The Union's position is that consultation leads to commitment.

The accident/incident investigation and incident recall procedures have the potential for a very positive impact on the workplace. I also believe that the implementation of the ILCI critical program suggestions will be beneficial. The one area where I believe the Company is creating a potential source of friction is in the exclusion of the crew safety representative from the accident/incident investigation procedure. I believe that the Company's inclusion of the crew safety representatives in other procedures is significant recognition that they can play a positive role. Exclusion of the representatives from the accident/incident investigation on the grounds that it is a fact-finding and not a fault-finding process would seem to me to send the wrong message to the workers.

RECOMMENDATIONS

10. Accident/Incident Investigation and Incident Recall.

10.1 That crew representatives be formally included in the accident/incident review procedure along with the supervisor and the worker.

10.2 That the accident/incident investigation report— Exhibit 66— be amended to include the Joint Health and Safety Committee on the circulation list.

10.3 That crew safety representatives be provided training in investigation methods and accident cause/analysis.

10.4 That the ILCI critical program suggestions 5.1 to 5.8 inclusive be implemented in full.
10.5 That the Fire Chief be notified of and involved in all fire or fire/potential related investigations.

TRAINING

Training is a critical element of any occupational health and safety program. Its purpose is to prepare the employees for the tasks they are to undertake, and should provide not only the skills and understanding required but also heighten the sense of safety awareness both of the worker being trained and those with whom he/she works. The authors of "Practical Loss Control Leadership" state that:

> Managers should provide for the training of newly hired workers, stressing safety, work methods, and job hazards. Statistics from the study [of Levitt and Parker] indicate very strongly (99.9% certainty) that such training will significantly reduce accident costs.(pp 239).

On page 242 of the above noted book, the authors list a six-step system of employee training. The six steps are:

1. Pinpoint training needs.
2. Set training objectives.
3. Decide how best to meet the training objectives.
4. Secure and/or develop the training program.
5. Do the training.
6. Evaluate and follow up the training.

The authors then provide extensive detail on the development of the above noted steps all of which are directly applicable to the Loss Control Program being implemented at DPPC.

The Ham Commission Report, the Burkett Commission Report, and the Stevenson Inquiry Report all place great emphasis on the need for training at all levels in the mining industry. The development of the common core program in Ontario, the product of bipartite endeavour, came about as a response to the need to address the training of mine workers using a coherent, systematic approach which could be adapted to fit the requirements of any mine. Training with respect to occupational health and safety is required for managers, supervisors and all other employees. All of these aspects were examined during the Inquiry.

The ILCI audit addresses training in two elements. Management Training, Element 2, and Employee training, Element 10. The ILCI audit makes 30 critical program suggestions for improvement in management training and 17 critical program suggestions for improvement with respect to employee training.

The DPPC submission of November 1989 outlined the training programs in place at the mine. Section 6 of Volume 1 provides details on how the "Training Department" is organized, summarized as follows:

- The training is separated into two areas: training of management/supervisory personnel, and training of hourly paid employees.

- Management/supervisory training is the responsibility of the Personnel Training Supervisor (Mr. J. Sumner), who reports to the Superintendant of Employee Relations. Mr. Sumner's additional duties include the instruction of all employees in first aid, and the coordination of the new employee orientation program.

- The responsibility for training hourly paid employees is divided into mill and underground operations with the Training Supervisor responsible for the mill, and the Underground Training Instructor responsible for the underground workers. These individuals report to the Mill Superintendent and Loss Control Superintendent respectively, and are responsible for developing course material, presenting worker orientation courses and other Company policies as they apply to the worker, and evaluating the workers progress throughout their training.

- Evidence given at the Inquiry showed that the Underground Safety Supervisor also plays a significant role in the orientation of new employees and newly appointed supervisors by making presentations on the Neil George Safety

System and the Right to Refuse provisions of the legislation.

Training for Managers

- Training for senior managers includes the newly written standards for management performance contained in the Loss Control Manual (Exhibit 59) which, when combined with the Emergency Procedures Manuals (Exhibits 16 and 18) will comprise a Safety Management Reference Manual. Almost all senior management personnel and most supervisors participated in a 24-hour Loss Control seminar held in January 1990.

- All supervisors received the Novice Miner I and Novice Miner II safety courses as part of their orientation program when first appointed. In addition, new supervisors receive a six-day supervisory orientation course covering a wide range of topics which include the safety program and accident prevention, the **Occupational Health and Safety Act,** first aid, Right to Refuse legislation, WHMIS generic training, the Neil George Safety System, and preparation and presentation of a safety meeting.

- Supervisors are issued with and required to study the Supervisory Administrative Guide. (Exhibit 33). In addition, they take a 10-module Management Development Program (Exhibit 34) which covers the usual spectrum of management topics such as motivating employees, discipline, appraisals, etc.

- Off-site consultants are also used for training supervisors on topics such as communications and follow-up techniques (Hamilton-Carter Outline, Exhibit 36).

- Underground supervisors are also given a supervisory awareness and training program using the Mine Production Training Manual (Exhibit 37) and some of the mine supervisors have been given training in mine rescue, first aid, the use of gas detection devices, fire control, etc.

- The two main criteria used in the supervisor selection process are leadership abilities and job related experience.

Training for Workers

- Newly hired production (hourly paid) workers are given a five-day orientation course which covers a range of topics including basic Company information and various aspects of the safety program, such as the Neil George Safety System, Joint Health and Safety Committees, WHMIS generic training, emergency first aid, novice miner training, emergency procedures, etc. An important aspect of the orientation is a tour of the underground workings and a demonstration of how to "scale", an essential procedure used to detect and remove loose rock from the back(roof).

- Each new worker is hired as a labourer and progresses through the positions as shown in Schedule A to the Collective Agreement currently in force at the mine.

- Once the five-day orientation is complete, the workers are assigned to a crew for a probationary period of 480 hours during which time they are under the general supervision of the shift supervisors. After the first week, the workers are usually placed with other experienced workers and observe how they perform their duties.

- Once the probationary period is completed, the worker is then able, when the shift supervisor declares him ready, to commence training on equipment. This process is initiated by the shift supervisor formally advising the Training Instructor, who in turn provides the worker with the required module on the tasks to be learned. The Training Instructor is then required to review the written information with the worker before he begins to operate the equipment.

- The equipment training is given either by a qualified worker assigned by the shift supervisor, or by the supervisor himself. After the worker has completed the required number hours on the particular piece of equipment, he may be tested for competency. The tests, written and practical, are to be given by the Training Instructor who is also responsible for monitoring the number of hours the worker has operated the equipment. Upon successful completion of the test, the worker is issued with a license for that piece of equipment. If he fails, he has to repeat one-half the number of training hours required for that piece of equipment before being re-tested.

- The Training Instructor may also enlist the help of others for training in ground control, fire safety, first aid, etc.
- Vacancies in the line of progression are filled by the most senior worker in the position below the vacancy.
- Maintenance workers enter at an appropriate trade level and progress thereafter. No specific job training manual is considered necessary.
- All workers are given emergency first aid training (which, I understand, is updated as required to keep the certificate current.)
- WHMIS training is given to employees in both specific and generic segments.
- Other training is given from time to time on such topics as blasting procedures, hoisting electronics, supplier training, and back awareness.
- Loss control training is to be given to all workers during the spring/summer of 1990.
- Every worker undergoes an annual evaluation which, among other things, assesses his safety performance and awareness.

The DPPC submission of June 1990 defended the Company's approach to training pointing out that there is an impressive list of training material for supervisors, and that training for the hourly paid employees is carried out under the supervision of qualified equipment operators, with the shift supervisors monitoring the situation and the mill and underground training instructors overseeing the entire process. DPPC concedes that there was some evidence that indicated that some shift supervisors do not follow through on safety concerns brought to their attention, but that this did not prove that they were not qualified to do their jobs.

The submission cites the evidence of Mr. J. McLean who was recently hired and had stated he found the orientation was adequate. DPPC also pointed to the fact that all witnesses who alleged that they were inadequately trained admitted that they considered themselves qualified to operate the equipment on which they were working. In essence, DPPC insists that the evidence shows that the training is adequate and properly supervised, and as a result there are few accidents or incidents involving machinery or equipment. The DPPC submission states that Mr. S. Cowen, Safety Officer, concluded that the training must be of a high standard, otherwise one would expect to see a lot of accidents or incidents (Volume 23, p. 3986 cited). (I was unable to find any such statement by Mr. Cowen, although he did make reference to the care, caution and courtesy practiced by equipment operators, and stated that this was common practice in the mining industry.)

DPPC identifies the Collective Agreement requirement of workers following the lines of progression as one of the problems with the training of workers. In the Company's view, this means that they are unable to hire experienced workers at levels acceptable to those workers, and that when a number of vacancies occur, workers can move up the lines of progression too quickly, raising the possibility that they are not fully qualified for the new position.

The Company's response to criticisms that the training program is not centralized is that it is not necessary, and that the three Superintendents who have training responsibilities—Mining, Mill, and Loss Control—meet regularly to discuss the coordination of the program. An additional training instructor has now been appointed in the Loss Control Department. (It should be noted that the organization chart submitted as evidence dated March 22, 1990 showed the Personnel Training Supervisor as reporting to the Superintendent of Employee Relations. If this situation has not changed, it means that there are four Superintendents with training program responsibilities.) Reference is made to the introduction of the Loss Control Program and the anticipated impact on the training of workers. Also, the recent development of training modules in ventilation, rock bolting, and ground control. These are addressed elsewhere in this report.

DPPC does not see the need for a shift supervisor certification program, or for a common core approach to training for workers. The Company points out, however, that if such programs are to be required by legislation, they must apply to all mines, not just DPPC.

Finally, the DPPC submission points out that officials of the New Brunswick Occupational Health and Safety Commission had given evidence that DPPC had complied with Section 287(2) of Regulation 77.58 under the **Mining Act.**

The submission of the United Steelworkers of America Local 9129 states that training is critical since it is a key mechanism for addressing how workers and supervisors deal with safety concerns. The Union states that training is even more important for inexperienced workers, pointing to the findings of the Ham Commission Report (p. 166) which confirm that the inexperienced miner is at the highest level of risk. The submission also cites the Burkett Commission Report which attributed a drop of 21% in accidents among young and inexperienced miners to the introduction of the common core modular training program. The complexity of the ore body at DPPC is, in the Union's view, yet another indication of the need for a comprehensive training program.

The Union acknowledges that some of the recent and proposed changes at the mine will contribute substantially to improving the miners' skills. However, the Union sees the need for major improvement in the training programs and identifies three areas in particular, as follows:

1. The need for a training department with appropriate personnel to develop and coordinate training for the mine;

2. The need to develop the trainer as well as a training program; and

3. The need to develop the constituent elements of a training program for underground miners.

Training of Supervisors

The Union submission reviews the training of supervisors and expresses concern that virtually all of the training is provided after the supervisor has been hired to the position and is carrying out his duties. Reference is also made to the fact that the supervisor selection process is entirely subjective, relying on past performance appraisals but using no set criteria. The Union is also concerned that the Personnel Training Supervisor never goes underground to follow up on the orientation training given to new supervisors.

It is the position of the Union that supervisors should be trained in such a manner as to ensure consistency, and that certification standards should be applied. Further, that supervisors bear a great deal of responsibility and that if they do not receive the required training, it reflects upon their ability to carry out their management responsibilities. The Union quotes the Burkett Commission Report which recommended:

> That first line supervisors receive the requisite training and carry out workplace safety inspections as part of a planned program of rotation of the first line supervisors through the safety department. (83)

The submission addressed other elements of the training program as follows:

Orientation and Safety Training

The Union points to the fact that virtually all of the worker orientation period is spent in a classroom setting, the only exceptions being the underground tour, the "scaling" demonstration, and the fire extinguisher training (weather permitting). Suggestions are made that the manner in which the material is presented be reviewed and that some of the major improvements made recently in adult education techniques be adopted. The Union also states that training material developed by the Workers Health and Safety Centre in Ontario, filed by DPPC as reference material at the Inquiry, is more thorough, extensive, and comprehensible than that made available by DPPC.

The Union has concerns regarding the fact that the Underground Training Instructor does not go underground to follow up on the training he has given, that the Instructor has no training as a trainer and has been left to his own resources in the development of a process for delivery of the orientation material. As well, the Union notes that the content of the Novice Miner I and II manuals have not been kept up to date and do not address such topics as the IRS.

Job Training

Acknowledgement is made that the training program at DPPC is in transition; that job/task analysis has begun; that a program was recently developed for workers in the drill-and-blast area; that a second underground training instructor's position has been created, and that responsibility for underground training has been transferred to the Loss Control Department. However, the Union repeats the concerns it raised in the submission of November, 1989 that there are no training plans, procedures, or standards which workers can measure their performance against, or to have their performance measured against, which will ensure that all miners have a basic core of training upon which they can rely.

The Union states that the training program at DPPC should be built on the same key premises as the common core program of Ontario. With regard to the role of job/task analysis in the development of the training program, the Union has concerns regarding the degree of consultation with the Joint Health and Safety Committees and the Union. I have already dealt extensively with the need for full consultation in all aspects of occupational health and safety program development, and consultation regarding training is equally important.

Additional Training

The proposed ground control and ventilation courses being developed by the Engineering Department are welcomed by the Union, but concern is expressed as to how they will - or will not - become integrated into the training program. The Union welcomed the hiring of Mr. C. Monahan and Mr. D. Willoughby, since they are both not only experienced in their field, but are also experienced as instructors, and urged that when the second underground instructor is hired similar considerations will be taken into account.

The key witnesses heard on the subject of training were the instructors themselves, some of the workers who had received the training, and experienced workers who had trained others.

Mr. J. Wilson, Underground Training Instructor, began work at DPPC in 1985 and worked his way through the lines of progression. He was appointed Underground Training instructor in May of 1989. His training in this field to date consists of:

- 3 days of supervisor training (training the trainer).

- 30 hours (spread over 15 weeks) of supervisor training.

- 3 to 5 days of Loss Control training.

His job description indicates that he is responsible for the training of underground workers and the orientation of new workers. He also has responsibility for the mine rescue training program (30% of his time), although this duty is not shown in his job description. He testified that he had little knowledge of common core training programs (933). He also testified that he worked with the Personnel Training Supervisor on an "as needed" basis in the coordination of their respective activities (928; 1134). Mr. Wilson indicated that other DPPC personnel involved in underground training included supervisors and engineering staff.

Mr Wilson testified that the five-day orientation course for new workers was carried out by a combination of himself, Mr. J. Sumner, and the Underground Safety Supervisor, Mr. R. Campbell. There did not appear (from the evidence given) to be any formal delineation of what was to be taught by whom, although there seemed to be a fairly consistent approach taken (963/5). With regard to the Novice Miner I and II manuals, he was not sure who was responsible for their maintenance nor was he aware of any regular review process in that regard (996/97). Subsequent evidence revealed that there were a number of incorrect or outdated entries - *including a completely reversed tagging out procedure*. Mr. Wilson conceded that changes to the manuals had not in the past been given to holders of the manuals, but they had been posted on notice boards. He also testified that not all miners had received copies of the manuals (1021/3; 1032/4). He stated that to his knowledge there was no reference in the orientation to crew safety representatives, nor was he aware of any training given during orientation on health hazards, such as noise or dust, but advised that WHMIS training was given.

Once the five-day orientation is complete, the workers (usually) go underground to begin their probationary period of employment. It is at this point that Mr. Wilson hands the workers over to the shift supervisors for a continuation of the training. He stated that he explained the training program content to supervisors if they initiated the contact (937/8). However, he later stated that the supervisors should be informed with regard to the training program and that it was the training department's responsibility to keep them informed (940). There was no evidence given by him as to the existence of any formal or documented process for doing this. Mr. Wilson also testified that he did not provide the shift supervisors with any information or instructions on what was to be taught or how it was to be taught (1108/09).

Mr. Wilson's evidence on the relationship between he and the shift supervisors doing the training was as follows:

- The shift supervisors decide where the worker shall be assigned to and who will supervise his training (975).
- The shift supervisors decide when the workers are ready for training on equipment, and when they advise Mr. Wilson of their decision he is then able to provide the workers with the necessary information modules regarding equipment operation (1067/8). He stated that there were occasions when he was not notified until after the workers were actually operating the equipment (1070).
- He is provided with a record of the number of hours a trainee works on a piece of equipment and maintains a log of these hours.
- He communicates informally with the supervisors as workers move through the lines of progression (1103/4).
- The shift supervisor may assign a qualified operator, the supervisor himself, or the Training Instructor to show the trainee the pre-checks and operation of the equipment (975).
- When he is advised that a worker is ready to be tested for licensing on a particular piece of equipment, he arranges and administers the test (957).
- He is not notified by shift supervisors of "temporary assignments" to other pieces of equipment and therefore does not provide the workers involved with any training material/modules related to that equipment (1104).
- He has no responsibility for monitoring the training being given by the supervisor/experienced worker, or for guidance as to how the men are to be trained (1107).

Mr. Wilson stated that he was familiar with equipment check-lists but did not use them (972). Later, however, he indicated that he taught workers how to do equipment pre-checks (1079). He also stated that he was not familiar with the process of re-training workers who fail equipment tests (971). The program outline given in the DPPC submission, Volume 1, Exhibit 40, is not contained in any other formal manual and was compiled by Mr. Wilson himself (1066). He indicated that he was not familiar with the incident recall system. He had, however, been involved in the development of a rock-bolting module in conjunction with Mr. C. Monahan. At the time of the Inquiry, Mr. Wilson reported to the Mine Superintendent. There was, however, no formal reporting system between he and his supervisor with respect to the training program. He confirmed that he spent the majority of his time on the surface. When questioned by DPPC counsel as to whether or not the Union had ever expressed concerns to him about the training program, he replied in the negative.

Mr. Wilson's evidence indicated that his role in the training of workers was as follows:

1. Providing the five-day orientation in conjunction with Mr. Campbell and Mr. Sumner.
2. Assisting with underground training when so assigned by the shift supervisors.
3. Providing equipment information modules when requested and subsequently logging the hours worked on the equipment by trainees.
4. Testing workers when asked to do so by shift supervisors.
5. Maintaining the mine rescue training program.

Mr. J. Sumner is the Personnel Training Supervisor at DPPC responsible for the management/supervisory training programs. He assumed this responsibility in June 1989, having worked as the mill training instructor since May, 1987. He has no formal training as a trainer but has experience in mining as a supervisor. He has some role in the orientation of new hourly paid employees and affirmed that he coordinated his activities with those of Mr. Wilson as required. One of Mr. Sumner's major accountabilities is the coordination of training.

Mr. Sumner's role in the orientation of hourly paid workers appears to be primarily that of providing first aid training, although his job description makes no reference to responsibility for first aid training.

The training of supervisors is undertaken by Mr. Sumner subsequent to the candidates being chosen by senior production staff. He does not have a role in candidate selection (2009). The orientation period is six days. He stated that it was his responsibility for ensuring that the training programs were kept up to date (2013) and that coordination between the three instructors (himself, the underground training and mill training instructors) was carried out on an informal basis (2016). It was clear from the discussion of his job description that it did not accurately reflect the duties and responsibilities he actually carries out.

In reviewing the orientation training (Exhibit 32) given to new supervisors, Mr. Sumner made the following points:

- A recent addition is a session on Loss Control .
- WHMIS training is given.
- Standard first aid is (usually) given. About 60% of supervisors have that training to date.
- The Supervisory Administration Guide (Exhibit 33) has not yet been given to the three most recently appointed supervisors (2031/32).
- The Management Development Program manual (Exhibit 34) is given and is either discussed with the supervisors or taken for home study. He stated that the same three most recently appointed supervisors had not yet had training on this manual (2032/4).
- The Management Guide to Loss Control (Exhibit 35) is given as a home study course "...on an honour basis..." (2034/5).
- There had been no apparent problem with trainees being unable to mange home study courses.
- Training is given on the Neil George Safety System (Exhibit 9).
- He has not yet used the Mine Production Training Manual (Exhibit 37) although the Company intends to use it. The new

supervisors have not yet been familiarized with this manual.

- Supervisor trainees are given the Novice Miner I and II Manuals (2066).

- He indicated that the training on the Safety Program, the Neil George Safety System, Right to Refuse legislation, Worker's Compensation, and Joint Health and Safety Committees is all carried out by Mr. Campbell when he is available. When he is not, Mr. Wilson teaches those topics. He further stated that new supervisors were not actually given the written information on the Neil George Safety System (Exhibit 9 "Applying the Five Point Safety System" during the orientation (2077). The presentation is oral.

- He stated that to date the underground supervisors had not been given WHMIS training (2055/56).

Mr. Sumner made it quite clear that all of the training given to supervisors is not provided during the six-day orientation, but is spread over a period of months (2058/60). He also stated that his approach to presenting the orientation material was not to use a program outline but to rely on his past experience (2083/4).

Mr. Sumner confirmed that the selection of candidates for promotion to shift supervisor positions was made on a subjective basis; i.e. that there were no formal criteria. He also indicated that he never goes underground but agreed that it would be of more assistance in training supervisors if he did (2044/5).

During cross-examination by counsel for the Union, Mr. Sumner testified that he had no procedure for testing or evaluating the newly trained supervisors, and that the production supervisory staff took care of that (2065/66). He further stated that, to his knowledge, there had been no review of the effectiveness of the training program for supervisory staff. He does maintain files on the supervisors he trains, and the programs that they have taken (2085/86). He indicated that there was no training for the supervisors on how they in turn should train others (2087/88). Mr. Sumner had never seen the Denison-Potacan Operations Manual (Exhibit 13), which is used by supervisory staff and deals with topics such as safety; health and security; first aid; protective clothing;

hazardous conditions; injuries and accident incident reporting, and fire protection (2096).

With respect to the IRS, Mr. Sumner testified that he made no presentations on the topic to the supervisors during the orientation period (2098). He also stated that the orientation did not include training on the communications process or handling employee complaints and improving work habits (2111).

Mr. Sumner's role in the training of supervisors appears to simply be that of providing the basic orientation and then at some subsequent time, providing the supervisors with further management manuals for home study or discussion on a one-on-one basis, or a combination of both. He has no role in the selection of candidates nor does he have in place any formal process of evaluating the effectiveness of the program. Since he never goes underground, he is unable to make any assessment of how the new supervisors are performing. This role is the responsibility of more senior levels of supervision, as is the process of actually training the new supervisors "on the job". He appeared to have a well documented system of maintaining records of what had been taught/given to whom, and tried to ensure that all new supervisors received the necessary training information. His ability to actually deliver training to supervisors once they had completed the orientation was subject to production demands and the periods of time for which those individuals could be made available (2014/15).

The evidence given by Mr. Campbell generally supported that given by Mr. Wilson and Mr. Sumner.

Mr. Claude Grenon, Shift Supervisor, drill-and-blast (now retired), had lengthy experience with worker training programs having been involved in the early development of the common core program in Ontario. He expressed very firm views regarding the importance and value of training and repeatedly returned to the importance of emphasizing safety in training programs.

> I felt that by training these people, even though it may be slower now when these guys ... are not good at it, we're going to get our investment twofold, threefold, or whatever .. and this is what I have in mind when I'm supervising people. (1401)

Mr. Grenon felt that he had been a successful supervisor and believed that the key attributes required for that position were:

- knowledge
- experience
- communication skills

When asked to comment on a program for shift supervisor certification, he stated that, in general, certification would be good, but that "schooling" requirements could exclude a number of experienced men (1426/8). Mr. Grenon had put in place at DPPC a training program for drill-and-blast that was structured, and the results assessed in a systematic manner. He used the "school stope" approach. Overall he was an excellent witness who made a strong case for properly planned, monitored and evaluated training programs.

Mr. T. Poulin, Loss Control Superintendent, is new to DPPC. He agreed that training appeared to be somewhat segmented (2601/3) and intended to " ... marry together ... " the different courses and "... come up with a supervisory training module..." (2777/80). Mr. Poulin also expressed support for the concept of training being placed under the control of one person.

During the hearings of June 20, 1990, Mr. N. McKelvey, Q.C., counsel for DPPC, stated in reference to the activities now underway at the mine:

> Of course, it can be improved, and again, the task analysis portion of the Loss Control Program will improve that training. So that they are developing into a training plan, a coherent, consistent plan. I'm not saying it's there yet, but what I am saying is that it will be there after the task analysis identified training needs, and then the follow-up goes from there...(4329)

I consider this to indicate that DPPC is committed to continuing to address training needs at the mine.

Mr. S. Sproul, marietta operator, expressed the view that more training was required for shift supervisors, especially with respect to ground conditions (3317/8). He has in the past trained workers on the marietta and believes that he, as the trainer, should be consulted with regard to the trainees competence and whether he is, in fact, ready to be tested. This is not done at present (3316). Mr. Sproul's own training on the marietta in 1985 was described as simply being told which buttons to press - and then left to operate the machine (3308; 3362). Mr. Sproul testified that when he was training other workers, the shift supervisor would visit at least once per shift and would frequently check with Mr. Sproul to see how the trainee was progressing (3362/4). He also stated that at one time he had been approached to determine whether or not he was interested in joining DPPC staff as a training officer (3299). He believes very strongly in the establishment of standards and procedures and of training workers to know and use them.

Mr. S. Parks was for a number of years a scoop tram operator, and in that capacity had trained other workers. He made the point that a scoop tram operator should be trained to the point where he can operate the machine without having to look at the operating levers. This would permit him to pay more attention to his surroundings. (3453/4). He had suggested that a section of the drill-and-blast area be used for training scoop tram operators. He stated that he trained the men well but was concerned that "... you just show the guys the ins and outs of the machine and then they're on their way." (3460/1). He would prefer to see one trainer per trainee (3475/76).

Mr. J. McLean is a new employee at DPPC who had been assigned to an experienced worker on a rock-bolting machine. He stated that after approximately two months he was told by the shift supervisor that he was sufficiently competent to operate on his own. Prior to that, the supervisor had frequently stopped to watch him work, but no conversation took place. This was in the fall of 1989. He was subsequently assigned to operate the equipment and at the time of the Inquiry was still doing so even though he had not been provided with an operating manual or asked to take a test (3561/2). At the time he gave evidence, he had not been visited by the underground training officer. (3571/2).

Mr. McLean's response to questions on the Neil George Safety System indicated to me that he was somewhat unclear as to how the system is supposed to work - even though he likes the system and conscientiously completes his cards (3574/5). He testified that he believed the orientation course was adequate (3558).

Mr. P. Lemaire testified that at the conclusion of his training period, he felt qualified to operate the equipment efficiently and safely (3401). (His shift supervisor was Mr. Claude Grenon, who had long experience in training.) Mr. Lemaire also testified that when he joined DPPC in 1975, he was given one day of orientation. Since that time, he has received training on WHMIS, first aid, and "fire training." He has not received training on the Right to Refuse or Joint Health and Safety Committees, and was not sure about training on the Neil George Safety System (3380/81). He testified that on one occasion he wrote tests for eleven pieces of equipment in one day (and presumably passed the tests) *and that he had not operated two of the pieces of equipment for which he was tested.* This occurred in 1986 (3381/2).

Mr. Lemaire expressed high regard for training provided by Mr. Grenon (3383/4). He stated that there should be one person doing the training, not having fellow workers passing along their bad habits (3394). In this regard, he agreed that job/task analysis would result in standards and procedures which would undoubtedly help (3394/5). He also noted that there appeared to be contrasts in the attitude different supervisors took to safety (3392/93).

Mr. S. Mercer is a new employee at DPPC. Prior to joining DPPC, he worked on a type of boom truck on the surface. Because of this, he was given ten minutes of instruction by his supervisor and left to operate the boom truck, but that he felt competent to do so (3539). He was subsequently assigned to a scissor lift, which is similar to a boom truck but is used for lifting men, not equipment. He was given no instruction. He qualified as an operator some five months ago (January, 1990) but has yet to receive a license. (I believe that he means he has put in the required number of hours.) He did not receive the operating manuals from Mr. Wilson until one and a half or two months ago. He stated that he is not sure if he is operating the equipment properly (3539/43). The Novice Miner I and II Manuals were reviewed during the orientation but there has been no review of those manuals since. Mr. Wilson has never been underground to see him at work.

The Safety Officer, Mr. S. Cowen, indicated that the "hard copy" of the training program looked adequate, but he had been surprised to learn during the Inquiry that there was no follow-up. He also indicated that he had on several occasions raised with supervisory staff the necessity of new supervisors being accompanied by a mine captain, since the majority of them had no previous mining experience, and that this should be a continuing process. He also stated that he had asked questions regarding the selection process, but had not received concise answers. He pointed out that since the shift supervisor force is often relatively new, it does not have role models (3397/9).

With regard to the training of workers by fellow workers, he stated that they tend to be meticulous in their approach, but that there is a tendency to omit steps in the process, and that the person being trained may in turn train someone using the same approach and also delete a step. He saw problems in this (4000/1). He was concerned that there is apparently no follow-up on any of the training, and that the training department does not acCompany the trainees when they go to their assigned work (4000).

Mr. Cowen was asked if he saw a need for the certification of shift supervisors and responded in the affirmative. The reason he gave was that it would ensure a standard or specific level of competence with respect to particular areas such as emergency preparedness, mine rescue, first aid, blasting, Company policy, the Act, and Regulations, etc. (4056/8). When asked about the applicability of Regulation 287(2), he stated that it would be impossible to have the hard rock type of school stope at DPPC, and that in his opinion DPPC complied with the above noted Regulation (4043/6). He believes that the common core approach can be applied to DPPC and stated that "... the more training the person has, the better off he is going to be." (4068/9)

Evidence was given by Mr. Dennis Shannon, Executive Coordinator, Ground Control, Cambrian College, Sudbury, Ontario. Mr. Shannon began teaching at Cambrian College in 1981 and developed the ground control training program there. He explained that the common core program is designed to train workers in basic mining skills, and to that end, modular training packages have been developed for various tasks such as drill-and-blast , equipment operation, etc. There is also a supervisor training module. He made the point that the common core concept could be adapted to any mining operation and that the original programs had been designed for both soft and hard rock mines. The overall thrust of his evidence was as follows:

- that training should be properly organized and standardized.
- that the supervision of training is vital

- that someone in a responsible position be given the ultimate authority to approve certification of the workers.
- that all training needs to be coordinated.
- that supervisor training should concentrate on ensuring that the supervisors have the practical skills and knowledge required.

Mr. Shannon stated that he believed the critical skills required by a supervisor are:

- communication skills
- experience
- knowledge

He concluded his presentation by showing a training film on blasting which is used at Cambrian College. His contribution to the Inquiry, at no small inconvenience to himself, was most appreciated.

FINDINGS AND CONCLUSIONS

Mr. Cowen stated the case rather well when he said that DPPC has a lot of well documented training material. It is the application of that material in a manner which will ensure that the information is learned and skills developed in a consistent manner and to an acceptable level which is critical. A review of the evidence shows that senior production staff were, by and large, satisfied with the training program. The program itself has developed over the period DPPC has been in operation with the most significant changes being made very recently. For example, senior managers have now been given, or are being given, training in occupational health and safety management.

The hourly paid worker training program as outlined by Mr. Wilson indicates that his role as an instructor is, in fact, minimal and his job title somewhat misleading. Once the orientation is over, he does little in the way of actual training other than with respect to the mine rescue program. He does maintain records of hours worked on machinery, but that is simply a clerical function. He also administers licensing tests. The problems I see with this program are:

- The training instructor lacks adequate training as a trainer.
- There is no follow-up by Mr. Wilson once the orientation is over, and no evaluation of the effectiveness of the orientation.
- There is poor coordination between him and the shift supervisors with regard to training workers on equipment. Equipment modules are late in being provided, or not provided at all.
- There is little consultation between Mr. Wilson and the shift supervisors with regard to the actual training program content.
- There is no formal procedure for maintaining the Novice Miner Training Manuals.
- There is no training on health hazards, other than WHMIS.
- There is no curriculum which priorizes the material to be taught, in what order, and by whom.
- The training underground is clearly the responsibility of the supervisors, yet no evidence was produced to show that it was carried out in accordance with a plan, procedure, or to established standards of competence, other than the operator hours required before one can sit a test for licensing on a piece of equipment.
- There is no provision for consultation with the person carrying out the training before determining the competence of the trainee with respect to a particular task or skill (e.g. equipment operation).

- During much of the training period the trainees are apparently not supervised on other than an occasional basis.

- The coordination between the instructors teaching the orientation program is purely ad hoc.

The supervisor training program is the responsibility of Mr. John Sumner. As was the case with Mr. Wilson, his job title (Personnel Training Supervisor) is somewhat misleading since once the orientation period of six days is over, the training of supervisors is controlled by senior production staff. The strong point of his program is the existence of a great deal of good management training material. It is the manner in which this material is delivered and what happens subsequent to the new supervisors completing their orientation that is less than ideal. Specific problems areas are:

- The training supervisor is untrained as a trainer.

- There is no formal curriculum, priority ranking, or time frame for the delivery of the training. There seems to be no logical approach with regard to what *must* be taught before the new supervisors commence their duties.

- The six-day orientation does not adequately address vitally important topics, such as the IRS, communications, handling employee complaints, etc.

- There are no formal criteria for candidate selection. It is an entirely subjective process and there is no role in that process for the person who is tasked with the responsibility for training those selected.

- New supervisors are sent to their positions without having been given essential (written) information, the document on the Neil George Safety System being one example, and the Supervisory Administrative Guide being another.

- Mr. Sumner was not familiar with the Denison-Potacan Operations Manual, an important manual which all supervisors use.

- Mr. Sumner never goes underground. There is, therefore, no follow-up on the orientation training and no assessment made of its impact or effectiveness.

- New supervisors are not closely supervised during the initial period in their new positions, nor is any evaluation made of their progress other than the annual appraisal.

- A great deal of reliance is placed on home study, and the training program is lacking in innovative (and proven) adult education techniques.

In my opinion, the intended purpose of the training program as a whole is not being achieved. The consequences of this can be seen in some of the communications and other problems the mine has experienced in the past. If workers and supervisors are not taught as a *priority* about topics such as the IRS, one should not be surprised if it does not work. Despite the best of intentions and efforts of Mr. Wilson and Mr. Sumner, (and I was impressed with their obvious commitment to their work,) little can be achieved without significant changes to the program. There appeared to be resistance on the part of some management personnel with respect to adopting the common core approach to training, and to the certification of shift supervisors in particular. I believe that this springs from the belief that it demands unrealistic academic standards of supervisors, whereas this is not the case. British Columbia and the Northwest Territories have "Shift Boss" certification regulations which emphasize requirements for knowledge of the legislation, safe mining practices, knowledge of inspections, and emergency procedures, mine rescue, and first aid training. Surely there should be readily identifiable *basic* standards established for shift supervisors in such important areas, established through legislation. Tripartite discussion led to the development of the shift supervisor certification regulations in the Northwest Territories and Ontario and the same approach could be used in New Brunswick.

Another area where a specific level of knowledge is essential is in the use of explosives. Most jurisdictions in Canada require that blasters conform to a certification program and I suggest that the same approach is required in New Brunswick.

The DPPC witness best qualified as an educator was Mr. C. Monahan, Senior Rock Mechanics Engineer. He frankly stated that he was using the common core approach of modular training and adapting it to meet the needs of DPPC. His experience in this area could prove invaluable to the Company.

With reference to the lines of progression, I believe that they do not of themselves prevent workers being properly trained. They simply require that new employees begin at the bottom. There is nothing to stop DPPC hiring experienced shift supervisors if necessary. Whether or not the lines of progression should exist is, in my view, a labour relations matter and thus does not fall within my terms of reference.

I firmly believe that the training program at DPPC requires improvement in the planning, organization, and implementation, and that it address the key issues identified by Mr. Shannon, referenced earlier. As well, the implementation of the ILCI critical program suggestions, which fully support the conclusions I have reached, would prove most helpful. The result will be a more productive, harmonious, safer, and healthier workplace.

RECOMMENDATIONS

11. Training

11.1 That all training programs be made the responsibility of the Loss Control Superintendent and all training be supervised and evaluated.

11.2 That a "Common Core" approach be taken and the development of training modules be undertaken for all aspects of the program, including the training of shift supervisors, that appropriate adult education techniques be utilized, and particular attention be given to the priority ranking of what is to be taught.

11.3 That the training of shift supervisors include rotation

to the Loss Control Department for instruction in inspections, audits, etc.

11.4 That the trainers be trained. This includes

trainer training for shift supervisors.

11.5 That the training program make provision for refresher training in accordance with an established schedule.

11.6 That the New Brunswick Occupational Health and Safety Commission rule on the applicability of Mining Regulation 77.58, Section 287(2) to the DPPC operation with particular reference to the establishment of school stopes.

11.7 That the New Brunswick Occupational Health and Safety Commission:

(a) establish a certification standard/requirement for shift supervisors with emphasis on the practical aspects of mining;

(b) establish a certification standard/requirement for blasters; and

(c) provide whatever assistance is appropriate in the development/implementation of the training program.

11.8 That the ILCI critical program suggestions 2.2 to 2.6 and 10.1 to 10.3 inclusive be implemented in full.

11.9 That the Union actively support, promote, and where possible, supplement the training program.

11.10 That all other training recommended in this report be incorporated into one comprehensive training program.

EMERGENCY PREPAREDNESS

Mining is by its very nature a potentially dangerous business and it is therefore essential to have emergency procedures in place at any mining operation. An emergency may be defined as an unforeseen occurrence requiring immediate action. In the mining industry, the event most feared - aside from a major fall of ground - is fire. Ground stability is addressed through mine design, the application of a good rock mechanics program, and mining practices. Fire prevention/protection is addressed through the various training programs, such as mine rescue and fire fighter training, and through the development of standards, method and procedures which are designed to minimize or eliminate fire hazards.

Emergency preparedness goes beyond fire prevention/protection, however, and has been concisely summarized by Mr. M. Crucefix on page 26 of the ILCI audit of September, 1989 as follows:

> ...planning for emergency response, evacuation of people, systematic shut-down of facilities, continuation of vital operations, identification of emergency equipment needs, the identification and protection of vital records, establishing of proper relationships with organizations and agencies which can provide assistance in the event of an emergency, and a program to ensure the quick and safe restoration of operations.

The **Mining Act** of New Brunswick, Regulation 77-58, Parts 5 and 6, Sections 19 to 48, outlines the fire protection requirements to be met underground and on the surface. Part 9, Sections 62(1) to 62(8) sets out the criteria for the establishment and maintenance of mine rescue teams.

The **Occupational Health and Safety Act** of New Brunswick, Regulation 89-66, Sections 11 and 12, establish standards for first aid training, first aid kits, and facilities. Neither of the above noted Acts have a requirement for a comprehensive emergency preparedness plan as such.

Exhibits 16 and 18 submitted to the Inquiry by DPPC in November, 1989 are, respectively, the Underground emergency Procedures Manual, revised in July, 1989, and the Mill Emergency Procedures Manual.

The Underground Emergency Procedures Manual was developed to ensure consistency and delineate individual responsibilities in the event of an underground emergency. The format is clear and identifies the roles and responsibilities of the management staff listed therein.

The Mill Emergency Procedures Manual, on the other hand, consists of a three-page document covering:

- fire protection systems
- reporting a fire
- emergency procedure - fire
- emergency procedure - serious accidents

The format of this document is not the same as that of the underground manual and it is, in fact, a detailed memorandum, not a manual. The balance of Exhibit 18 consists of three memoranda on the topics of working around nuclear devices, electrical lockout procedures, confined entry procedures, and a procedure for dryer entry. I do not consider these memoranda to form part of an emergency procedures manual.

The DPPC submission of November, 1989 and June, 1990 both state that fire protection at the mine is first class. This view is based on the evidence of Mr. T. Reid, Fire Chief/Surface Safety Officer, Mr. J. Wilson, Underground Training Officer, and the fire prevention and protection reports of Mr. G. Swanson, consultant, covering the periods 1988 and 1989. The submissions highlight parts of the fire protection program as follows:

- The Fire Chief's inspections.
- Inspections by insurance underwriters.
- Training of surface fire-fighting teams, and back-up provided by local fire departments.
- Training of mine rescue teams.

The DPPC submission of June, 1990 also references the ILCI audit of September, 1989, indicates what action has been taken on the critical program suggestions and acknowledges that an emergency plan which addresses all departments and areas has yet to be finalized.

The ILCI audit stated that the emergency preparedness element of the DPPC safety program (from a Loss Control perspective) has to be considered to be in its early stages of development and made ten critical program suggestions for improvement (with additional suggestions under the ten headings). The critical program suggestions are 7.1 to 7.11 inclusive. The essential thrust of these suggestions is as follows:

- The need for the coordination of the planning and execution of emergency preparedness.
- The need for a master plan.
- The need for lighting and power to be provided in emergencies.
- The need for a program to identify, test, and maintain master/emergency controls.
- The need for a facility-wide survey of fire loss exposures and fire protection equipment.
- The need for organization of emergency teams trained for initial and immediate response. Examples given were: fire brigade; evacuation and rescue; medical treatment; security; communications; utilities; fire protection system; damage control; public relations; investigation.
- Consideration of the unusability of facilities after an emergency to be part of the planning process.
- Communications; alternate means should be developed as a back-up.
- Public relations/media contact procedures.

It is apparent from the ILCI audit and the action embarked upon by the Company in response that there were deficiencies and that they must be addressed, as they will be if all of the ILCI critical program suggestions are implemented. It is worth noting that the findings of the ILCI audit of September, 1989 differ from those of the Swanson audit of February, 1990, which covers the period and elements also covered by the ILCI audit. The ILCI audit found the overall emergency response program -

including fire protection and prevention - to be in the early stages of development, while Mr. Swanson stated that a high standard of fire protection and prevention is being maintained at the property.

The Swanson Report made no suggestions for improvement, nor did the report directly reference whether or not a review of the fire extinguishers underground had been made. Mr. Swanson complimented DPPC on the quality and maintenance of the automatic (fixed) fire suppression and detection systems, fixed hose systems, wheeled and portable fire equipment, water supplies, fire mains, and hydrants, fire pumps and fire fighting equipment. Apart from the problems identified regarding the underground fire extinguisher maintenance, there has been no evidence to contradict the Swanson Report findings with regard to the above noted equipment. DPPC appears to have bought and installed quality equipment.

The June, 1990 DPPC submission indicated that workers' concerns regarding the number and location of fire extinguishers underground were being addressed, and also that a program was being put into place regarding the ongoing inspection and maintenance of the fire extinguishers. The submission further stated that all workers receive "hands-on" training with fire extinguishers, as well as viewing a film on other fire suppression methods.

The Company's response to criticisms by worker witnesses regarding stench gas tests was that Mr. Cowen, New Brunswick Occupational Health and Safety Commission Safety Officer, found that the time taken for the gas to reach all workers was acceptable. With regard to the use of the SCADA system as part of the fire protection system, the Company pointed out that it was intended that this system act not as a primary warning but as a supplement to the stench gas tests, and that the use of SCADA was not required by law as is stench gas.

The Union submission of June 8th, 1990 cited five main concerns.

1. The inadequacy of the maintenance and establishment of fire protection systems, particularly underground with respect to localized fire protection such as fire extinguishers and general systems such as SCADA;

2. The inadequacy of fire protection training for both underground and mill workers;

3. The inadequacy of ensuring that information on emergency procedures is kept current and distributed to the work force;

4. The absence of a regular and systematic review of the status of emergency preparedness at the mine; and

5. Delays by the Company in responding to fire hazard concerns, such as underground fire extinguishers, the location of the fuel bay, and other items.

In support of concern No. 1, the Union pointed to past commitments made by the Company with regard to making the SCADA system a part of the fire protection system and expressed the view that the Company should honour its commitment. The problems identified by the Underground Safety Supervisor and the Union Safety Inspector regarding the inspection and maintenance of fire extinguishers were cited by the Union as continuing concerns.

It is the Union's position that the concerns regarding the quality of fire protection training, both underground and on the surface, emergency procedures and the review of the status of emergency preparedness, still need to be addressed. Another issue is the location of the fuel storage area and re-fueling station, already addressed in this report. Finally, the Union points to the delay in the Company's response to concerns such as fire extinguishers, the fuel bay etc., as being an issue which needs to be addressed.

The evidence given by witnesses brings the issues clearly into focus. The Employee Relations Superintendent, to whom the Fire Chief (Mr. P. Reid) used to report, stated that the Fire Chief/Surface Safety Inspector was responsible for monitoring both the surface and underground fire suppression systems, standpipes, and fire extinguishers - including repairs for the latter (385). He testified that all underground personnel were given hands-on training with fire extinguishers (387), and that the maintenance of the Emergency Procedures Manual was the responsibility of the Safety Department (471). He was unsure whether or not the Swanson audit had included a review of the underground fire extinguishers.

Mr. S. Hodgson, Mine Superintendant, stated that underground fire protection/prevention was his responsibility (623). In response to questions on the frequency of the stench gas tests, he stated that the legislation required that each crew must be exposed to one stench gas test per year and that the practice was to hold all four tests in the last quarter of the year (630). (Regulation 77-58 of the **Mining Act,** Section 22(3) simply requires that each shift be exposed to one test per year.) Mr. Hodgson conceded that the SCADA warning horns would be heard more rapidly in the cutting areas of the mine than the detection of stench gas (628). (This is because of the relatively slow movement of air in a potash mine, and the fact that in hard rock mines the stench gas is carried to the different work areas through pressurized air pipes.) He readily conceded that production (i.e. his) staff have responsibility for ensuring that the fire extinguishers are properly maintained. There was, however, no map of their location nor was there in place a maintenance program/policy. He stated that his mechanical staff were responsible for the actual maintenance of the fire extinguishers (630/31).

The Fire Chief/Surface Safety Officer's job description requires him to "Implement fire prevention and fire-fighting policies and procedures..." for DPPC (2407). Despite this, he testified that he was unaware as to whether he had seen the ILCI critical program suggestions regarding fire safety, and stated that he had not been consulted regarding their implementation, in particular with regard to a survey of all underground fire extinguishers and the establishment of a program to ensure that they are inspected and maintained (2499/2502). He outlined the fire-fighter training program for the workers in the mill, and stated that a man's job determined whether or not he was selected as a fire-fighter. Men in key operational positions were not chosen. He stated that physical ability and previous experience were not selection criteria, and that the men retain their Right to Refuse when called out to deal with a fire (2409/11; 2446; 2456/60).

The issue was raised of remuneration on the same basis as that which applies to mine rescue teams. The surface fire-fighting teams do not receive this remuneration, but the matter is now being addressed by the Company.

Mr. Reid stated that men with beards are not trained in the use of self-contained breathing apparatus, nor are their partners (bearded or not) (2458). His evidence indicated that the fire-fighter training does not include the use of a "burn house" or similar facility in which to train men in the use of self-contained breathing apparatus in dark, smoky conditions (2422/23). He also stated that the men were not given a fire-fighter's manual; only those pages which Mr. Reid feels are appropriate are copied and given to the man (2461/62). During the summer of 1989, a system was introduced to monitor the fire-fighter training program (2460/61).

Training on fire extinguishers was described (2470/73) and consisted of simply extinguishing a diesel fuel fire in a tray. The Company trained the entire work force in this manner during the summer of 1989. As well, workers were shown a film on the topic. Mr. Reid testified that during the orientation of new employees, they were shown a film on fire extinguishers, but not necessarily provided with "hands-on" instruction in the use of one (2473).

With regard to fire safety inspections, Mr. Reid testified that he checks all fire protection systems on the surface on a monthly basis (2412). His inspections of the fire suppression systems in the underground fuel storage area and refueling station are conducted weekly, and when he cannot make the inspection, the Underground Safety Supervisor does it for him (2413/14). Mr. Reid testified that he has no written criteria for inspections, nor does he have a formally planned schedule. (2480). He used to be responsible for the inspection of all underground fire extinguishers (as well as those on the surface) but had found it impossible to carry out this task as he had no means of transportation (2464/9). Mr. Poulin recently relieved him of this responsibility. The reports of his inspections are filed but are only circulated to supervisory staff (2480).

Reference has already been made to the fact that Mr. Reid is not automatically privy to underground investigations into problems/issues with a fire loss potential (2477/78).

The principal surface fire-fighting equipment as described by Mr. Reid appeared to be quite adequate. Personal protective fire-fighting equipment is currently the subject of a review by the Company, along with a review of all fire protection equipment in the mill. The concerns with the personal protective equipment raised by Mr. Price related to having the proper sizes for the men, etc.

Mr. Reid explained that he had a system for annually checking and maintaining every fire extinguisher located on the surface (2412). No such system was in place for the fire extinguishers located underground until work on a proper program was begun in January/February 1990 (2497). He testified that he plays no role in updating the emergency procedure manual for the mill with respect to general safety issues, but did review the fire safety aspects (2478/9). Mr. Reid stated that the Swanson Reports for 1988 and 1989 included in their scope all fire fighting/suppression aspects of the DPPC operation (2502).

The Underground Safety Supervisor (Mr. R. Campbell) gave evidence that in the fall of 1989 he and the Union Safety Inspector began work on development of a program of inspection and maintenance of the underground fire extinguishers and stated that; "Before there was no set down forms or way of knowing where the fire extinguishers have been checked or anything underground..." (2401) "So, we set up a program plus a procedure and a tagging procedure in order to get this done because before there was just no way of knowing. There was no tagging procedure or forms set down to regulate all this." (2402) Mr. Campbell went on to say that Mr. Reid assisted in drafting the procedures. This action by Mr. Campbell was triggered by observations made by the Union Safety Inspector. Mr. Campbell understood that the Mine Superintendent carried the responsibility for the maintenance of underground fire protection equipment (2404).

Mr. T. Poulin, Loss Control Superintendent, testified that implementation of the ILCI critical program suggestions regarding fire safety was being addressed and, in response to the ILCI critical program suggestion 7.5.1, that "A survey to verify the adequacy of fire protection equipment has been conducted for the underground, but surface facilities have not been done as yet." (2588) With regard to the ILCI critical program suggestion 7.6, Mr. Poulin testified that:

> ...underground mine rescue teams are established and trained regularly. Surface fire teams have recently been restructured and frequency of training has not been set. Surface teams have yet to be trained on how to respond to chemical spills, flash floods, or the control of hazardous materials (2588).

He went on to say that although he had been assured that the training was being given to the surface fire teams, there was no proper documentation of the training. He also stated that he was proceeding with development of a proposal for remuneration of the surface fire fighting teams. As well, he said that he intended to address the issue of the workers designated as fire-fighters who have beards, and therefore cannot be trained to use the self-contained (Scott) breathing apparatus (2588/93). He intended to address the entire area of fire fighter training (2790). Mr.

Poulin also indicated that while the responsibility for maintaining the fire extinguishers underground rested with the Mine Superintendent, the Loss Control Department intends to put in place a system that monitors the maintenance (2791).

Mr. R. Feltus, Union Safety Inspector, explained that concerns he had regarding the underground fire extinguishers led him to address the matter in August, 1989 (3007/11). He stated that he was aware of orders written by the Safety Officer, Mr. S. Cowen, regarding fire extinguishers, and with Mr. Campbell set about reviewing all locations in the mine in order to determine where they believed fire protection was required, what was required, and what equipment was already in place. In October, 1989, Mr. Feltus wrote to the Mine Superintendent suggesting locations at which fire extinguishers were needed. The letter was sent by Mr. Hodgson to Mr. Campbell for comment and Mr. Feltus was not sure what happened after that. He testified that, in his mind, there is still confusion as to who is responsible for checking the fire extinguishers, him or production staff. He went on to say that Mr. Poulin is now involved in putting into place a system for monitoring the maintenance of the fire extinguishers (3130-32).

Mr. Feltus felt quite strongly that the SCADA system should form part of the emergency warning system in the mine, and indicated that the Company had made a commitment to have the system fully implemented by late 1988. The workers were, according to him, very happy with this proposal. His overriding concern was that the Company had made a commitment which it had not met (3093).

Mr. E. S. Price, worker co-chairman of the mill Joint Health and Safety Committee, testified that, in his view, the fire fighter training was inadequate as was the personal protective equipment issued to the fire fighting teams. He stated that they are now in the process of establishing fire response procedures.

> ... a breakdown of what equipment we have, what's available, basically a little audit on our fire material... what we've got, how much we've got. Then that's the first step in taking a look at the whole operation... (3640/41)

He gave specific details on the training he had received - which he readily conceded was not as good as some given to others - and stated that he had not received as much as four hours training in two and one half years (3642). One of his prime concerns aside from the actual training was that of personal protective equipment for the fire-fighters (3644; 3663). When questioned on the subject of his beard, he stated that he was perfectly willing to shave it off (in order to be able to use a Scott air pack) when the Company showed that it was willing to make an equivalent commitment (3698/99).

His view of fire extinguisher training was that the training used to be better than the more recent approach. Previously, different types of fire and fire extinguishers were used for practice, but this was no longer the case (3664/5). According to Mr. Price there is now a general fire alarm in the mill, but only shift supervisors or designated persons are allowed to activate that alarm. A review of the Emergency Procedures Manual for the mill shows no such restriction and no other documents were offered in evidence in support of Mr. Price's belief (3646/7).

Union President Mr. T. Harris expressed the same concerns regarding the fuel storage area and refueling station as did the other workers. He stated that the former General Manager had made a commitment to him that they would be relocated, but that this commitment had not been met. (3725/27; 3732; 3814/16; 3845/6). With regard to the stench gas tests, he made the point that in hard rock mines the gas is pumped through a pressurized air system (which is much faster than the air distribution system at DPPC) (3824). Mr. Harris felt very strongly that the SCADA system should be regarded as an integral part of the fire warning system, utilizing warning horns throughout the conveyor belt system (3723/25; 3816/24; 3846/48).

Safety Officer Mr. S. Cowen, testified that he believes *both* stench gas and the SCADA system should be used as emergency warnings at the mine and, like Mr. Harris, commented on the slowness of the air movement which carries the stench gas through the mine. He also conceded that the time it took for the men to receive the stench gas warning and go to refuge stations was acceptable, but stated that the Company had been told that, because of the slow air movement, it would be advisable to introduce into the SCADA a warning system that would complement the stench gas (3963/5; 4049/53; 4103/4).

He testified that the refuge stations were quite adequate and that they were now being fitted with compressed air lines (3965/73). Some concern had been expressed by workers regarding the refuge stations, but

Mr. Cowen was quite specific in his approval of the ones at DPPC. He did express the hope that the installation of compressed air lines would not be seen as a reason to reduce the size of the rescue stations, pointing out that they were currently constructed to provide a specific air volume. The addition of compressed air lines to the current size of rescue station provides for a sufficient air supply should the air line be ruptured or otherwise fail in an emergency situation. There was evidence from Mr. Campbell (2375/6) that he and Mr. Feltus developed check-lists and inspected the refuge stations. Included in those inspections was a check of the first aid kids.

First aid training is given to every employee in the mine by Mr. J. Sumner, Personnel Training Supervisor, who testified that he maintained records on all certificates issued and ensured that they were kept current (2023/4). The placement and maintenance of first aid kits was addressed by Mr. Campbell who indicated that he provided first aid kits to people on an as needed basis (2385). He further indicated that they were then responsible for refilling the kits. He also stated that the kits were placed (in the mine) where he thought they were needed (2386). He stated that there was no one person in the mine responsible for monitoring whether or not the first aid kits are properly maintained (2387). He did testify that there was a list of contents and that the kits included a first aid book - the same one with which the workers were trained.

All basic mine rescue training is given by Mr. S. Cowen, Safety Officer. Mine rescue certificates are issued at the basic, advanced, and instructor levels. Mr. J. Wilson, Underground Training Instructor, is a qualified mine rescue instructor. He testified that the mine rescue team had been very successful in provincial mine rescue competitions, a fact attested to by Mr. Cowen. Mr. Wilson does the maintenance mine rescue training and spends up to one-third of his time on this activity. This responsibility is not listed as a major accountability in his job description (942). Mr. Cowen appeared satisfied with Mr. Wilson's maintenance of the mine rescue training, which follows an established program, lesson plans, etc. Mine rescue teams are a vital part of the emergency response capability at any mine, and those at DPPC appear to be first class.

Hoist operator R. Carmichael outlined his role during an emergency and identified two areas in which he saw room for improvement. The first was with regard to the person(s) trained and designated as hoist "back-up" operators. Mr. Carmichael suggested that the back-up operators would benefit from receiving a rehearsal/review of emergency hoist operations every month (3599/3600). The second point he made was with respect to emergency telephone calls. There are, according to Mr. Carmichael, periods when the hoists are on "manual" operations and both hoist operators are too busy to answer any of the four telephones in the hoist control room. One of these telephones is designated for emergency calls regarding backfill operations, but emergency calls may come through any of the remaining three. He conceded, however, that they could stop the skip at any time to deal with the telephones (3621/22). The point to be considered, one would think, is whether it is productive to stop the operation of the skips for calls that might well not be emergencies.

Another issue that had been raised earlier in evidence was operation of the hoist "bells." The hoist "bells" is a signalling system advising the hoist operator of the required hoist movement. The Union felt that more workers should be trained in the use of the bells in the event of an emergency and the need to use the hoist. Mr. Carmichael stated that he felt less than half the workers knew how to operate the bells (3591). He also stated that until recently some of the supervisors also did not know, but this matter had now been addressed. He did not express an opinion as to whether or not the men should be trained as had been suggested. Mr. Cowen, Safety Officer, opined that he saw no need to train all of the men in the mine to know how to use the bells to activate the hoist, and that in any event, the bell signals were posted in the cage itself (3973/5).

FINDINGS AND CONCLUSIONS

In my opinion, based firmly on the evidence, the emergency preparedness program at DPPC was neither excellent, nor was it inadequate in all respects. Some aspects were excellent, mine rescue training being one example, and some of the equipment noted by Mr. Swanson another. The principal problems centre on a lack of planning, programs, standards, procedures, delegation of authority and responsibility, and poor documentation.

Fire-Fighter Training

The fire-fighter training program trained mill workers in fire fighting techniques, of that there is no question. However, the program lacks the following:

- There is no apparent standard to which the men are to be trained, nor is there provision for certification of any kind - as exists with the mine rescue teams. This could easily be addressed through cooperation with the Department of Education and Training. There *are* fire fighter certification standards in New Brunswick.

- The training was not carried out in accordance with any documented plan/program/schedule. This resulted in some men receiving far more training than others. These issues are now being addressed by Mr. Poulin.
- The personal protective equipment provided was of good quality, but evidence was given that there was a problem of matching men and sizes - or having enough sets provided and identified by size to ensure that, in an emergency, men and equipment matched.
- The issue of men with beards had not been addressed and resulted in a serious weakening of the fire fighting capability of the men. In addition, there is no provision for ensuring that the men chosen as fire-fighters are physically able to carry out that duty. Reference could be made to the National Fire Protection Association "Standard of Professional Qualifications (for fire-fighters), N.F.P.A. Standard 1001."
- There was no provision for training the men - in realistic conditions of enclosed space and darkness - in the use of the Scott air packs. This *is* done when training the mine rescue teams.
- There was no proper inventory of fire fighting equipment in the mill. I make this assumption on the basis of Mr. Poulin seeing the need to carry out a survey to determine whether or not the equipment is adequate.

Mine Rescue Training

The training of the mine rescue teams must be very good, otherwise I fail to see how they could have achieved the success they did in competitions.

Fire Extinguishers - Training

The evidence is that during the summer of 1989, all employees were trained in the use of fire extinguishers, and shown a film on the use of larger, wheeled extinguishers. I believe this to be a very positive step, hopefully to be repeated on an annual basis.

The manner in which the training is now given appears to me to be minimal at best. Evidence was given that fire extinguisher training in the past provided the opportunity to deal with more than one kind of fire, but that this is no longer the case. I was concerned to learn that new employees are not given "hands on" fire extinguisher training during their orientation; they are shown a film. The problems as I see them are:

- The training appeared to be minimal in scope.
- There is no schedule for refresher/review training.
- New workers are not trained before being sent underground to work.

Fire Safety Equipment Inspections and Maintenance

The issue of fire protection/prevention equipment inspection and maintenance needs to be addressed at DPPC. The shortcomings are:

- The Fire Chief had no formally planned inspection schedule or written inspection protocol.
- The inspection reports were kept in his files with only the supervisors receiving copies.
- The Fire Chief's inspections of the underground fire extinguishers - *the first line of defence against fire in most areas* - were seriously compromised because of a lack of transportation. He has now been relieved of this responsibility.
- There was no program in place regarding the regular inspection of fire extinguishers located underground, and their state of maintenance, until the Union Safety Inspector initiated action, supported by the Underground Safety Supervisor in the fall of

1989. I consider this type of program to be fundamental to fire safety and cannot understand why such had not been put in place by the Fire Chief - or by the Mine Superintendent in the absence of action by the Fire Chief who lacked the necessary transportation. The Company is now addressing the matter of inspections by the Loss Control Department through the implementation of a program for auditing the status of the fire extinguishers.

- There was no evidence of a documented maintenance program for the fire extinguishers underground. This is not to say that they were not being maintained, but simply that there was no evidence that a planned, systematic maintenance program was in place. Further, there was no evidence that a *specific maintenance program is being put into place* with a person designated (by the Mine Superintendent) with responsibility for its implementation. There was no reference to responsibility for fire extinguishers in any of the job descriptions of Mr. Hodgson's staff. The Union Safety Inspector stated that he is still unclear as to specifically who will be responsible for the maintenance, and this issue should be dealt with without delay.

- There was no evidence of written criteria determining the type of fire protection equipment required underground, other than in the fuel storage area, the refueling station, and on some equipment, and no plan indicating where the equipment is located. A positive step that the Fire Chief has taken is the standardization of the fire extinguishers. This has obvious benefits in training, ensures that those using the extinguishers are familiar with them, and reduces maintenance costs.

- There were no written procedures for proper use of the fuel storage area or refueling bay, and the Fire Chief did not feel that such were his responsibility. Since these areas have a high fire risk potential, I believe that he could have taken decisive action in this important matter, especially when one considers the (unchallenged) testimony of Mr. Hoddinott regarding the frequent fuel spills in the refueling station area (3494/5; 3531).

In short, the programs for fire-fighter training, fire extinguisher training, fire safety inspection, and fire extinguisher maintenance left something to be desired in the manner in which they were planned, organized, executed, and monitored. Recent action by the Company has begun to address some of these problems. What is required is that the efforts the Company has made in terms of providing fire prevention and fire fighting equipment be matched by programs which directly deal with its proper placement, use, inspection,and maintenance.

Hoist Bells/Operator Back-Up

The issue of the hoist "bells" is not, in my opinion, a major concern. Provided that all of the supervisory staff are properly trained in their use, as well as those employed as cage tenders, etc., and given that the bell signals are posted in the cage itself, I share Mr. Cowen's view that there are ample resources available to operate the bells in the event of an emergency.

The suggestion of the hoist operator that his "back-up" have regularly scheduled refresher sessions has merit. As well, there is merit in examining whether something can be done to establish one emergency telephone number for emergency calls to the hoist control room, which will ring on one (emergency) telephone.

SCADA

The workers obviously favour the full integration of the SCADA alarm system as a part of the underground fire alarm system in support of the stench gas. In light of the Company's expressed view that they already consider the SCADA alarms to be complimentary to the stench gas, I do not think that the two parties are too far apart on this issue.

In my opinion, the expense involved in fully integrating warning horns, etc. - as suggested by Mr. Cowen - into the SCADA would be minimal when one considers the benefits to be gained in having the "double insurance" that this would provide. There is the inescapable fact that the air does move slowly in the mine and that the cutting areas in particular would definitely benefit from the earlier warning that the SCADA horns would provide. I do not believe that the Company should rely on the fact that the SCADA alarm capability is not required under legislation to defer the action promised by the former General Manager.

Refuge Station

According to Mr. S. Cowen, the refuge stations are adequately constructed and supplied. They are inspected on a regular basis by Loss Control Department staff and the equipment therein checked. I see nothing wrong with the current status of the refuge stations, which will be further improved by the addition of pressurized fresh air supply lines. My only concern would be that the refuge stations might, subsequent to the installation of these air lines, be reduced in size. This should not happen.

First Aid Training/Equipment

There appears to be a good first aid training program at the mine and good first aid facilities. The addition of an Occupational Health Nurse will further enhance this program. The only problem I detected is that there is no one directly responsible for ensuring the first aid kits are regularly inspected or maintained, and there is no plan/program which addresses where they should be placed, either on the surface or underground. Mr. Campbell testified that he inspected those in the refuge stations, but the remainder are, presumably, the responsibility of production staff.

Fire Alarm - Mill

The issue raised by Mr. Price regarding who has the authority to activate the general fire alarm in the mill is not supported by the evidence presented to the Inquiry. If, however, a directive does exist - whether verbal or written - that precludes any worker from activating the fire alarm if he feels that he cannot promptly control a fire with the means at his disposal, it should be declared null and void.

DPPC has purchased a considerable quantity of fire suppression/prevention equipment and supplies, and in some areas has successfully addressed specific needs, e.g., fire suppression systems, etc. There is, however, room for improvement.

The issues on which most of the evidence given at the Inquiry centered relate to the fire safety aspects of the emergency response program. The lack of clearly defined roles and responsibilities, and a concurrent lack of planning, standards and procedures led to the situation which prevailed before the Inquiry was convened. Mr. Poulin expressed his view of the importance of standards when he stated,

> If you're going to control something, you've got to be able to measure it. If you're going to measure something, you've got to measure it against a standard. So the methodology of course is to set some standards, comply to them, and then measure your compliance. And that's where the audit comes in. (2514)

The application of basic Loss Control and management principles should result in decisive changes in virtually all the problem areas identified in the Emergency Preparedness Program, at little cost and in short order. The immediate impact will be to fundamentally and positively affect the safety of all who work at the mine.

RECOMMENDATIONS

(All applicable to CMD areas and employees.)

12. Emergency Preparedness

12.1 That the ILCI critical program suggestions 7.1 to 7.11 inclusive be implemented in full.

12.2 That the inventories—currently being carried out by the Loss Control Department—of the placement and condition of all fire protection/prevention equipment and supplies on both the surface and underground be completed and thereafter maintained, and that the deficiencies noted be fully addressed by the responsible parties.

12.3 That the Loss Control Department fire safety inspections be properly planned, organized, implemented and documented on a scheduled basis; that copies of the inspection reports be provided to senior management, the Joint Health and Safety Committees, and that copies are posted on workers' notice boards.

12.4 That the Superintendents of the mill and the mine plan, organize and implement inspections of all fire safety equipment in their jurisdictions; plan,

organize and implement a program of maintenance of that equipment, and formally designate persons tasked with the responsibility for both the inspection and maintenance programs.

12.5 That:

(a) training in the use of fire extinguishers be given to all new employees during their orientation and to all workers annually; and

(b) that the training be standardized, documented, and as comprehensive as possible.

12.6 That:

(a) fire-fighter training be properly planned, scheduled, implemented, documented and maintained in order to ensure that all fire-fighters are kept at a proper state of readiness;

(b) the training be comprehensive, to a specific standard, and that certificates of competence be issued;

(c) the personal protective equipment be so organized as to fully serve its intended purpose in emergencies;

(d) workers designated as fire-fighters remove facial hair which prevents the proper use of self-contained respiratory equipment (Scott Air Packs); and

(e) criteria be established to determine whether or not designated workers are physically capable of safely performing as fire-fighters.

12.7 That standards and procedures be written and put into effect regarding all tasks with a known fire risk/explosion potential, and that those for the fuel storage area/refuelling station be posted in those locations and enforced.

12.8 That the person trained as the hoist "back-up" operator be required to attend refresher sessions at the hoist control room at intervals of no greater than three months.

12.9 That consideration be given to assigning one telephone number as the emergency number, and the number ring in the hoist control room on a designated telephone (aside from the backfill emergency telephone).

12.10 That the integration of the SCADA system of warning horns/bells be made as complete as the existing conveyor system will allow, and that it be maintained in a fully operational state thereafter as a part of the emergency warning system in the mine.

12.11 That the stench gas tests be held in conjunction with a test of the SCADA warning system, and that these tests be held one per year for each shift, at three month intervals.

12.12 That:

(a) specific persons be tasked with responsibility for the maintenance of first aid kits, both on the surface and underground; and

(b) the Loss Control Department establish locations for the placement of all first aid kits, advise all employees of those locations and thereafter monitor the maintenance of the first aid kits by the persons so designated.

12.13 That the New Brunswick Occupational Health and Safety Commission require that the mine submit annually an emergency preparedness plan.

INDUSTRIAL NOISE

In June 1989 there were changes made to the Regulations on noise which reduced the maximum decibel level permitted over 8 hours of exposure from 90db to 85 db. Mr. D. Willoughby, Ventilation Engineer, testified that subsequent to the change in the Regulations , he was contacted by the Occupational Health and Safety Commission and advised to take appropriate action. As a consequence, Mr. Willoughby ordered a sound level meter in December 1989, which was received in February 1990. Mr. Willoughby stated that he intended to begin noise testing at the mine in the near future. He also stated that the Company provided equipment operators with hearing protection (1762/5).

Mr. S. Cowen, Safety Officer, conceded that he had not as yet enforced the Regulations regarding noise exposure. He stated that the determination of what hazard existed and what protection was needed should be based on proper standards and measurements of noise in the workplace. He indicated that he would prefer to see DPPC hire an independent consultant to carry out the noise exposure survey at DPPC. He also stated that he believed that worker education regarding noise exposure would be helpful, and that the New Brunswick Occupational Health and Safety Commission may be able to be of some assistance to DPPC in putting a proper noise exposure control program in place (4002/5; 4042/43; 4131/33). Mr. R. Blanchard, Director of Inspection Services, New Brunswick Occupational Health and Safety Commission, also stated that the Commission might be able to offer some assistance to DPPC with regard to this matter, and indicated that he would prefer to see a fully qualified industrial hygienist carry out the noise exposure survey (4159/60).

Mr. T. Poulin testified that he intended to address the issue of noise exposure and would be considering audiometric testing, etc. (2789).

ILCI critical program suggestions 12.1 to 12.15 inclusive deal with Health Control and Services. 12.1 suggests that an inventory be made, listing all occupations and their related tasks, to identify those that could have exposure to airborne contaminants, skin irritants, radiation, noise, extremes of temperature, or oxygen-deficient atmosphere. The ILCI audit discusses the need to address occupational health hazards, stating that a special effort should be made to assess hazards not visible to the eye, and points out under critical program suggestion 12.5 that a procedure should be established for an occupational health review of processes at the design stage to assess potential health hazards in new or modified processes.

Under the ILCI audit section on hiring and placement (18.2), Mr. Crucifix points out that audiometric examinations should be given prior to placement in jobs where aural discrimination is required or where noise levels could result in hearing loss. I believe it is logical to take this one step further and state that, once that determination has been made, there should be annual audiometric testing of all workers exposed to hazardous noise levels.

FINDINGS AND CONCLUSIONS

A review of the evidence indicates that the only action taken at the mine to date with regard to noise exposure and noise-induced hearing loss is to provide the workers with hearing protection and encourage its use. Noise-induced hearing loss is irreversible, and I conclude, therefore, that a proper program of noise monitoring, posting of high noise areas, introduction of engineering controls, worker education, audiometric testing and maintenance of audiometric records is required, and that the New Brunswick Occupational Health and Safety Commission should ensure that henceforth there is compliance with the noise Regulations .

RECOMMENDATIONS

13. Industrial Noise

13.1 That a comprehensive noise level survey be conducted throughout the underground and surface operations of the mine by qualified person(s) and that such general surveys be completed at least annually.

13.2 That noise level surveys at specific sites be conducted and repeated as necessary.

13.3 That where possible engineering controls be used to reduce noise to levels not exceeding those prescribed by the legislation, and that where this is not possible, such sites be posted as high noise level areas.

13.4 That workers be provided with hearing protection for use in all high noise level areas and given appropriate instruction in the hygienic use and maintenance of

that equipment.

13.5 That all employees be given education on the subject of noise-induced hearing loss, and that the subject be referenced during new employee orientation.

13.6 That audiometric testing be performed by qualified persons at the time of hire and annually thereafter, and that the records of such tests be regarded as medical records, stored and safeguarded accordingly.

13.7 That workers be provided with copies of their audiometric tests, and that the results be explained.

OCCUPATIONAL HEALTH AND SAFETY PROMOTION

DPPC has a policy of recognizing safety awareness through an awards system. The principal features of the program are:

- the issuance of safety certificates to all employees when hired;
- for each year worked by an employee without a lost-time injury a letter of commendation is issued along with a small gift, and a safety sticker is affixed to the safety certificate noted above. Each subsequent year that a given employee continues to have no lost-time accidents, the value of the gift increases;
- the policy has recently changed to recognize the safety record of an entire crew, as well as individual awards;
- there is, periodically, special recognition of employees with an outstanding safety performance;
- DPPC participates in the Mining and Metallurgical Accident Prevention Association of New Brunswick's quarterly award program which recognizes low lost-time frequency accident rates, and has won awards a number of times since the mine began operations;

- the Company recognizes those employees who were spared serious injury because they were wearing proper personal protection equipment, through the presentation of "Wise Owl" and "Golden Hat" awards;

- the Company also formally recognizes safety achievements in its newsletter, the Potogram.

The ILCI audit addresses general promotion and makes critical program suggestions 17.1 to 17.7 inclusive, all of which appear to be reasonable. The Company is committed to implementing these suggestions.

FINDINGS AND CONCLUSIONS

All of the above are commendable and show an attempt by the Company to stimulate safety awareness. I have suggestions for additional forms of recognition for some of those who play a key role in the safety program at the mine. They are:

1. Crew Representatives

Mr. R. Feltus commented during his evidence that these men should be given recognition both by the employer and by their fellow workers. I believe that the most important recognition the Company can give is through implementation of the recommendations made earlier in this report. In addition, however, I suggest that their names be posted at the mine, identifying them as crew safety representatives, and that after serving one year in that capacity they be issued with a framed certificate of recognition. For subsequent years of service, they could be issued with stickers for the certificates.

2. Joint Health and Safety Committee Members

I suggest that, after one year in office, the Committee co-chairmen and members also be issued with framed certificates, indicating their date of appointment (and, when they step down, the duration of their service). As well, I suggest that both the Company and the Union consider how they might otherwise provide some concrete form of recognition to both crew safety representatives and to Joint Health and Safety Committee co-chairmen. They are, after all, key players in the safety program whose role has significant importance for both employer and employee. The

Company and Union may wish to consider whether they choose to take any such action jointly, since there is room for unity of purpose with regard to promoting safety.

3. Shift Supervisors

I suggest that consideration be given to creating an award for the shift supervisor who most actively promotes and practices safety awareness in the workplace. I also suggest that this award be made by the Joint Health and Safety Committee using feedback from the workers via the crew safety representatives, and that the criteria to be considered include adherence to the Neil George Safety System. The purpose behind this suggestion is to try to provide some reinforcement and incentive regarding safety for the shift supervisors, who have a difficult job, and also to provide an opportunity for workers to indicate their appreciation for a good "shifter".

4. Occupational Health and Safety Information

Mr. Campbell gave evidence that there was some form of library at DPPC consisting of information on occupational health and safety. I believe that it would be most helpful for both management and the workers if this concept was expanded somewhat and the information made freely available to all employees at the mine (if that is not already the case). The promotion of health and safety awareness through the provision of valid, current information forms a valuable part of any safety program, and it would take little in the way of resources to establish a very useful library at the mine. In addition to whatever may already exist, I suggest that DPPC may wish to consider subscribing to a compact disc (and other) information services such as that offered by the Canadian Centre for Occupational Health and Safety. Denison Mines in Ontario avails itself of this particular service, which has an international reputation for quality. The library could be managed by the Occupational Health Nurse, who could provide assistance with interpretation of the information as required.

RECOMMENDATIONS

14. Occupational Health and Safety Promotion

14.1 That the ILCI critical program suggestions 17.1 to 17.7 be implemented in full.

14.2 That DPPC give consideration to formal recognition of the work of Joint Health and Safety Committee members and crew safety representatives.

14.3 That some consideration be given by DPPC and the Union for an award to be made by the Joint Health and Safety Committees to the shift supervisor deemed to have made the most significant contribution to the safety program, to be voted on by the workers, using the crew safety representatives as their intermediaries.

14.4 That a comprehensive library of occupational health and safety information be established, accessible to all employees.

GROUND CONTROL

The DPPC submission of November 1989 outlined the Company's mine design/rock mechanics/ground control program in Volume 1, Sections 11.1, 11.2, 11.3, and 11.4.

S11.1 provides an historical review of the development of the mine and the rock mechanics activities associated with that development.

S11.2 briefly addresses mine design and planning activities.

S11.3 provides detailed information on ground control communications and monitoring as follows:

S11.3.1 - Rock mechanics personnel carry out routine underground visits to view ground conditions in both active and inactive headings. Discussions with supervisory personnel and workers at the commencement of shifts regarding ground conditions provide an avenue of two-way communication on technical matters and information to and from miners on ground conditions and possible problems.

S11.3.2 - Rock mechanics personnel are responsible for investigating, analyzing and recommending appropriate action on ground control conditions. They become aware of matters requiring their attention by verbal reports from supervisors or miners, and by reviewing hazardous log book entries and unusual occurrence reports.

S11.3.3 - The nature of the ground condition will determine whether remedial action can be taken immediately in the field or whether more detailed analysis and consideration is necessary. Minor matters are often immediately rectified by such steps as sounding, scaling, bolting or cutting. More serious situations and all ground fall, in active areas, involve a more detailed investigative process with detailed reports, prepared by the rock mechanic engineer, which usually make recommendations for work and/or procedures to prevent similar incidents. These are circulated internally, and, in addition, they may be forwarded to DPPC rock mechanics consultants for review. Commencing in mid-1989, reports of major incidents have been posted so as to come to the attention of all employees.

S11.3.4 - All ground falls in active areas are also reported to the Joint Health and Safety Committee. Additionally, an investigation is carried out by the Union and DPPC's Joint Health and Safety Committee representatives, the Union safety inspector and representatives from the safety department. In more significant ones the New Brunswick Occupational Health and Safety Commission Safety Officer also participates in this process.

S11.3.5 All active headings are visited routinely, including daily for mechanical cutters, by a geologist. His daily reports on geology include projects and recommendations for the operation of the cutting machine, including the geological horizon to follow, the appropriate cutting angle and other specific instructions with respect to the particular heading, such as bolting. As well, the geologist discusses conditions observed with the operators and supervisors at the site and abnormal conditions are discussed with rock mechanics personnel.

S11.4 deals with roof support, and discusses the use of rockbolts as a preventative and safety measure. The Company uses what has been described as the "Cadillac" of rock bolts (C. Monahan, 1563).

The mining of this difficult ore body has been addressed through the application of a geological and rock mechanics/ground control program. DPPC personnel believe that the necessity of making continuous changes in mining methods in order to deal with the problems presented by the ore body has given the workers the uneasy feeling that the Company does not know what it is doing. DPPC states, in its submission of June 1990, that the ground control and rock bolting course being developed by the Senior Rock Mechanics Engineer should alleviate the workers' concerns.

The Union's submission of June 1990 sets out the following concerns:

1. insufficient training for and exchange of information to underground miners in both the understanding of ground control and in the practical procedures of ground control, such as rock bolting, etc.;

2. inadequate and/or incomplete procedures for ground control available to the workforce underground;

3. inadequate supervision of compliance with established procedures.

The Union's submission states that the workers have responded positively to Mr. Monahan's course on rockbolting, but points out that the promised consultation between the Company and the Union on the development of these courses did not take place. The Union also states that these courses should become a regular part of the training program. In addition, the Union believes that the "extended" course to be offered to supervisors should also be offered to crew safety representatives and operators of continuous miners.

Formal procedures are, in the view of the Union, essential, if the work is to be carried out safely and in a consistent manner. The Union strongly supports the Loss Control approach to putting such procedures into place. The Union believes that supervision of compliance is also essential, and the evidence of marietta operator S. Sproul is cited in stating that safety procedures were not consistently followed from shift to shift.

Mr. D. Waugh, Superintendent of the Engineering Department at DPPC, gave extensive evidence on the complexity of the ore body and the difficulties encountered in mining it. He outlined the various points of contact between his staff and the supervisors and miners (as set out in S11.3, Vol. 1, DPPC submission of November 1989). He also stated that the continuous miner operators are probably more familiar with the geology of the mine (other than the geologists) than anyone else in the mine, because of their work and their daily contact with the geologists (1200/01).

Mr. Waugh indicated that it had been acknowledged that more ground control training was needed than had been provided in the past during new employee orientation (which other evidence showed to be approximately 1 1/2 hours of instruction), and that training modules were being developed on rock mechanics, rockbolting, geology and ventilation. He also stated that he would prefer that his staff be directly involved in the delivery of these modules. Mr. Waugh stated that he assumed that the men were well trained in the techniques of what they were doing and that the new modules were intended to provide the knowledge as to *why* these activities were carried out. He expressed support for consultation with all parties involved, including the "...Union safety side..." (1232/4).

One interesting observation Mr. Waugh made was with reference to purchasing new equipment,

> ...Recently we bought a new bolter. We actually brought up operators. We met with the bidding

> manufacturers. We brought operators to the table, and I was quite amazed at how much that improved what we actually ended up in ordering, having the guy that was actually in the field who knew things that were really frustrating... (1242)

This is one instance where consultation with the workers proved beneficial to the Company.

Mr. Cyril Monahan joined DPPC in October 1989 and is the Senior Rock Mechanics Engineer. He is well qualified in his field and gave extensive evidence on the topic of rock mechanics. He stated that the rock mechanics consultants used by DPPC are world renowned for their expertise. Mr. Monahan made the point that, "in order for...a suitable rock mechanics program to be in place, there should be good...standards and procedures, either written or well understood...so I ensure that we do have that..." (1570). He outlined his liaison with the operations staff at the mine and explained how he communicated with supervisory staff on a daily basis. He personally goes underground at least three times per week, and his subordinate goes underground daily.

Mr. Monahan is currently working on training modules for production workers, supervisors, tradesmen (electricians, mechanics, etc.), and is using the Ontario common core approach as a guideline (1574). He stated that he will be adapting the (Ontario) Cambrian College program elements of:

- communications vocabulary
- support techniques
- blasting
- instrumentation

He intends to develop and present the training modules in a site-specific manner (1594/5), and believes that the common core approach provides a skeleton on which one can build (1631). Mr. Monahan has offered his services to the underground training instructor and has worked with him on the rockbolting procedures manual. There is, however, no formal mechanism for the coordination of his activities with those of the underground training instructor. He further indicated that his subordinate assists with the new employee orientation program in making a presentation which lasts about 1 1/2 hours.

As one would expect from a qualified teacher who also has teaching experience in the mining industry (he held a course for joint health and safety Committees at a mine at Elliot Lake), Mr. Monahan had some firm views on communications and training. He expressed the opinion that the ground control/rock mechanics training given during orientation is very basic and must be built upon (1623). This is what his training modules are designed to do. He also stated that training modules have to be updated periodically, and that workers and supervisors should be required to take refresher courses (1627/28). When questioned about the role of the Union, Mr. Monahan stated that, in his view, both the Union and the Joint Health and Safety Committees should be consulted in the development of training programs for ground control.

When asked to identify the key elements of a good ground control system, he listed the following:

- communications
- training
- engineering

Mr. Monahan was familiar with the T. Stevenson report "Improving Ground Stability and Mine Rescue" and advised that he had implemented some of the recommendations of that report, and would implement all remaining recommendations which were applicable at DPPC.

Mr. Stanley Sproul, marietta operator, gave evidence that there was a lack of written standards and procedures for vital safety practices such as "brow bolting". He also expressed concern over the lack of consistency in the application of the verbal procedures regarding brow bolting, etc. (3301/2). He expressed concern that shift supervisors appeared to have too much freedom to determine how a heading should be worked and that written procedures would eliminate this. He described how a former supervisor, Mr. Benetti, had verbally established procedures and insisted that his men follow them. Mr. Billy Gale, another supervisor, later added to the procedures established by Mr. Benetti, further improving them. Mr. Gale was then promoted and the procedures appeared to have fallen by the wayside, in that they were inconsistently practiced by the different crews. Mr. Sproul indicated that he liked having the procedures in place and had been told by his mine captain (M. Gale) that he was the only one who still practiced the belt-checking procedure (3358; 3303/6).

Mr. Sproul testified that he continued conforming to the procedures which included pre- and post-shift checks of the machine, the belt systems, brows, etc., and that on occasion he had been "spoken to" for so doing. In his opinion, the supervisor(s) in question saw the time spent on the checks as wasted production time. The issue of brow bolting was pursued with Mr. Sproul by counsel for the Company. Mr. Sproul's response was that his insistence on bolting brows as a standard safety procedure was supported by the Engineering Department. He also indicated that he had actively sought the development of standards and procedures related to ground control through discussions with senior managers such as mine captains and the Superintendent of Employee Relations (at that time responsible for the safety program) (3339/41; 3365).

FINDINGS AND CONCLUSIONS

The evidence indicates that DPPC has a difficult ore body to deal with, and that the Company has assembled the engineering and technical resources required to ensure that the operation is carried out as safely as possible. I am satisfied that there is substantial communication between the engineering staff and the production supervisory staff on a daily basis, reinforced with weekly and bi-weekly meetings. I also believe that the perception of senior Company personnel is correct, the miners lack confidence in the actions of the Company because frequent changes are made to the mining methods.

The lack of confidence in the Company on the part of the workers was clearly demonstrated in the incident which occurred on 1102 drift. This was a case where Mr. S. Cowen was asked by the Company to go to the mine, where a group of men were in 1102 drift, refusing to come out. Their concerns were related to ground conditions, and they insisted that Mr. Cowen look the situation over. This issue will be addressed in more detail later in this report. I raise it at this point merely to show that there was indeed a lack of confidence by the workers in the competence of the Company.

The degree of expertise present in the Engineering Department, and the flow of information between managers was not matched by the necessary level of understanding of ground control possessed by the workers, nor were there in place any of the essential standards and procedures for the miners to follow - and for the supervisors to ensure *were* followed. Mr. Monahan very correctly identified the necessary requirements for a good ground control program - communications, training, and engineering. There were fairly good communications and good engineering, but virtually no ground control training at DPPC. In addition, the standards and procedures that Mr. Monahan also identified as being essential were present in the Engineering Department, but there was nothing formal and little informal at the workface.

Mr. Sproul's evidence on the issue of standards and procedures shows that he not only wanted to see them in place but actually sought to have them put in place. His conduct in this respect is highly commendable, and it is regrettable that a more positive response was not forthcoming. It is also puzzling, for, given that the Company knew it had a difficult ore body to deal with, one would have thought it would have welcomed positive input from a skilled worker.

In recent months, the Company has taken action to correct these shortcomings, as the activities of Mr. Monahan indicate. Another field of related activity is the job/task analysis process which should effectively address all the tasks and establish proper, documented standards and procedures which should be consistently applied throughout the mine. DPPC has a competent engineering staff. The addition of Mr. C. Monahan adds not only a high level of expertise in rock mechanics but also the skills of a qualified educator. His efforts should receive the fullest possible degree of support from DPPC, for he has a great deal to offer. I would note, however, that *all* training modules should be integrated into the formal training program of the mine, and that there should be full consultation and cooperation between the Engineering and Loss Control departments on this matter. Not only that, the job descriptions of staff such as Mr. Monahan and Mr. Willoughby (Ventilation Engineer) should be changed to reflect their new training responsibilities. The Stevenson Report deals extensively with all aspects of rock mechanics and ground control and DPPC will benefit from the application of all relevant recommendations in that report. The needs identified for good communications, education and training all apply at DPPC.

In brief, I believe that with the introduction of formal and continuing training in ground control, and with the establishment of standards and procedures related to work practices, DPPC should effectively address the problems it and the workers have experienced with ground conditions at the mine.

RECOMMENDATIONS

15. Ground Control

15.1 That the ground control training program be improved as follows:

(a). all ground control training be fully integrated into the formal training program of the mine and that the training given during the orientation be enhanced; and

(b). the modular training courses being developed be given to workers (including tradesmen/maintenance staff) and supervisors, and that refresher training courses be scheduled and maintained.

15.2 That standards and procedures be developed for all mining jobs/tasks, and that they be consistently applied and enforced by DPPC.

15.3 That the Joint Health and Safety Committee and the Union be consulted with regard to the training program.

15.4 That appropriate measures be taken to enhance communications with workers on ground conditions and control.

15.5 That all recommendations of the T. Stevenson Report which are applicable to DPPC be implemented.

VENTILATION AND AIR MONITORING

The design, planning and monitoring of the ventilation system and internal communication pertaining to ventilation is covered in Section 12.0 of the DPPC submission of November 1989. The DPPC submission of June 1990 states that the mine has a sophisticated ventilation system that is properly used and adequately monitored. DPPC also points out that the Company is constantly working to improve the ventilation system, a fact acknowledged by the Safety Officer, Mr. S. Cowen (4039).

In January 1990, DPPC received a report from ventilation consultant M. J. Howes of Camborne Associates Limited regarding the ventilation study carried out at DPPC in 1989. The report indicates that the ventilation at the mine is adequate but that some action could be taken to improve it. The key recommendations are:

- to increase the effective utilization of the air by controlling leaks;
- to increase air underground by adding a new fan;
- to add booster fans to 9/10 and 12 panels;
- to design large drill-and-blast stopes away from the direction of entry; and
- to develop a computer network simulation program for ventilation monitoring.

DPPC advised that the authors of the report will make quarterly visits to follow up and expand on their recommendations and observations.

DPPC points out that there are times when bad air will be encountered in the mine, such as after blasting, and that supervisors test the air and do not allow workers to enter until it is safe to do so. The Company also indicates that the past practice of "stealing air" has been addressed by Mr. Willoughby, Ventilation Engineer. The Engineering Department presents short lessons on ventilation to workers during the orientation period, and also trains supervisors. In October 1989 follow-up training was given in the form of a safety talk on ventilation to all crews. A four-hour course is being developed for supervisors, and this same course will be given to the Union Safety Inspector and the Joint Health and Safety Committee co-chairmen.

The Loss Control Program addresses ventilation in elements 3 (Planned Inspections), 12.1 (Health Hazard Identification), 12.4 (Industrial Hygiene Monitoring), 12.5 (Health Maintenance Program), and 13.4 (Evaluation of Compliance with Occupational Health Standards).

DPPC intends to implement all of the critical program suggestions contained in the September 1989 ILCI audit which relate to the above elements, and has already taken the following action:

- the planned inspection program will include the ventilation system and airborne contaminants;
- programs of supervisory observation and professional monitoring of health exposures and compliance with control measures are being developed;
- first line supervisors have been trained in the use of gas-detecting devices and a Ventilation Technician has been hired to monitor gas readings and to report incidents of non-compliance.

The Company submission outlines in detail the current ventilation monitoring and testing program at the mine and may be summarized as follows:

- main fan volumes and pressures are monitored monthly;
- exhaust air is monitored for contaminants, air volumes, pressures and wet and dry bulb temperatures semi-annually;
- diesel fumes are monitored weekly;
- CMD diesel fumes are monitored monthly;
- blasting fumes are monitored daily (by shift supervisors);
- the control room operator monitors the main fans

and ventilation doors positions continually, and the surface and shaft temperatures every two hours;

- CMD shift supervisors monitor diesel fumes and diesel air volumes weekly.

The Company addresses the concerns that have been raised regarding dust by pointing to the semi-annual dust surveys, and to the provision of dust masks for employees. DPPC also states that it is impossible to bring dust levels down to below the ten milligrams per cubic centimeter as required by the legislation, and quotes Mr. S. Cowen as confirming that it is not possible to achieve that level. The Company has recently increased the use of water sprays on the Alpine 100s and at other points of the production line. The dust in the marietta cutting areas is controlled by the use of brattice. The DPPC submission states that the dust produced in the mine has not been proven to have any harmful health effects.

The United Steelworkers of America's, Local 1929, submission of June 1990 states that workers have expressed concerns regarding air quality in the mine. The submission points out that Mr. Willoughby has conceded that there had been many complaints (1968; 1977). The Union also quotes Mr. Cowen as stating that there was need to do more "long term" examination of air in the workings (4039). The specific issue which the Union asks be addressed by the Commissioner is: "Can the present monitoring of air quality at the mine guarantee that the workers are not working in bad air?"

The submission acknowledges that the Ventilation Engineers spend considerable time with the design and monitoring of the positive airflow in the mine, and that the recommendations made by Mr. Howes will be followed up. The point of contention for the Union is with respect to air quality, not quantity. The Union identifies the three types of monitoring being carried out by the Company as:

1. diesel fuel emissions;

2 re-entry surveys;

3. dust surveys.

The essential points made by the Union with regard to the above are:

- the current monitoring does not reflect individual exposure;
- the sampling technique used is unlikely to provide an accurate picture of exposure over the course of a shift.

The Union believes that air monitoring for diesel emissions must be carried out in the actual work situation, and monitor the entire work period.

The concerns regarding the re-entry surveys center on the use of the data obtained, pointing out that a survey held twice per year is inadequate for making determinations of air quality, given the changing conditions at the mine created by the drill-and-blast mining method.

The Union approves of the dust sampling program to some degree, but is concerned that it is only done semi-annually, and that no attempt is made to measure visibility, a problem which had been raised by one worker witness. Finally, the Union stated that the Joint Health and Safety Committees should have some involvement in the noise control and air quality monitoring programs.

Mr. D. Willoughby, Ventilation Engineer, joined DPPC in January 1989. He is a qualified mining engineer with additional qualifications in mine ventilation. He does not have industrial hygiene qualifications. In December 1989 a Ventilation Technician was hired and this person assists Mr. Willoughby with the air monitoring program.

Mr. Willoughby designed the main and auxiliary ventilation systems and is responsible for them. He has developed one- and five-year ventilation plans, linked to the production plans. He testified that he believes that the air flow in the mine is satisfactory. He also referenced the report of Mr. M. J. Howes and stated that some of the recommendations it contains have been implemented and that others are under review. The ventilation plan is updated monthly by Mr. Willoughby and is circulated to all supervisory staff. The supervisors know that he bases his calculations regarding air flow in any given area on the number of machines assigned to that area. Any change to the number of machines in an area can thus profoundly affect the quality of air.

Mr. Willoughby gave evidence that he was aware of the workers' concerns regarding air quality and responded to them. When first he worked at DPPC "stealing air" was fairly common. Since this practice (of changing the way the brattice is placed as part of the air flow design) causes serious problems with the air flow, Mr. Willoughby gave safety talks to all the crews and supervisors, in October 1989, and since that time he could not recall a single instance of "stealing air" (1760/61).

He gave evidence on the various types of monitoring carried out by himself and the Ventilation Technician, and it was obvious from his evidence that efforts to improve air circulation and control dust have improved since he arrived at the mine. Mr. Willoughby conceded that, prior to April 1989, routine monitoring of diesel fumes was not always carried out (1970).

Under cross-examination by the Union counsel, Mr. Willoughby testified that the diesel fume monitoring currently being carried out is of individual pieces of equipment, not of a general work area, and that the monitoring was of limited duration and not for the entire shift (1971/74). Mr. Willoughby was also questioned on his semi-annual re-entry surveys which are carried out to determine what levels of blast fumes are present after a blast, how long they take to clear, etc.. He felt that his surveys provided fairly consistent results and that it was reasonable to extrapolate from them that air conditions were the same throughout the year. (Daily monitoring is carried out by the shift supervisor as required, using portable equipment.) (1974/78). He testified that the 8-hour threshold limit values (TLV's) were applied to the 12-hour shifts because the work week was 40 hours in duration (1974/76). In response to questions on the dust monitoring program, Mr. Willoughby stated that he was considering using personal dosimeters (1984).

The evidence of the Underground Safety Supervisor, Mr. R. Campbell, was that there were occasional high blasting gas readings in the CMD area (2281/2; 2308/10). This was supported by the evidence of other workers, such as Mr. J. Sinclair, who works for CMD (3873/75) and the Union Safety Inspector, Mr. R. Feltus, who stated that he would note the concerns regarding bad air entered on the Neil George Safety System cards and check with Mr. Willoughby to see if he had been notified of the situation. Mr. Feltus stated that Mr. Willoughby had never been notified (by the shift supervisors, one assumes). He also suggested that a small pocket book be developed for employees, containing information on the air contaminants to be expected, the TLV's and short time exposure limits, and how they relate to 8- and 12-hour shifts (3049/51). Mr. Feltus said that Mr. Willoughby's training and sessions with workers on ventilation had been very helpful to the workers.

Mr. W. Vail, Alpine 100 operator, testified that the cab of the machines was very hot, which made it impossible to keep the door closed and thus take advantage of the positive pressure (filtered) air system. He indicated that at times the dust was so heavy that he could not see as far as the rear of his machine, let alone see the face he was working on. He stated that the addition of water sprays to the machine had helped. Mr. Vail suggested that better lighting would also be of help to him (3411/13).

Mr. S. Parks, belt construction operator and formally a scoop tram operator, stated that his concern was with air use, not quantity. He pointed out that the main air intake is also the main travelway, and that vehicles were too frequently parked in the travelway and that they not only pollute the intake air but also constitute a fire hazard (3448/51; 3489/81).

Mr. W. Hoddinott, heavy equipment mechanic, testified that there has been some improvement in dust suppression where water sprays were used, and recommended a much wider use of the sprays (3497; 3520/21).

Mr. T. Harris, Union President, also believes that air quality, not quantity, is the issue to be addressed. He too referenced the fact that there had been problems with blasting gases, and that the main air intake is used as a travelway (3744/5).

Mr. J. Choi, project manager for CMD at DPPC, stated that, "...at the present time, we have adequate volume; however, there is still lots of room for improvement as far as the monitoring and the control system (is concerned) which is a problem. Most of the problem in the ventilation of the mine." (4226/7). He indicated that when there were concerns with air quality, they immediately remove the men, and that he contacted Mr. Willoughby regarding ventilation problems. He also stated that he wanted booster fans as soon as possible. (They now have them.) Mr. Choi testified that most of the problems with air circulation in the CMD area arose from the relocation of brattice by DPPC employees, who, he readily conceded, did this without realizing the impact on the CMD area, and from the parking of vehicles across ventilation routes (4256/7).

Safety Officer Mr. S. Cowen testified that a one-level mine such as DPPC is difficult to ventilate and that, in potash mines, if you increase the velocity of the air too much in an attempt to provide a greater volume, you simply create a worse dust problem (3989/90). He stated that he had discussed the dust problem with the General Manager and the Mine Superintendent and had suggested that they look at the dust suppression systems used at the adjacent potash mine, owned by the Poash Company of America. They followed his advice, and, as a consequence, water sprays were installed on some equipment (3990/91).

Mr. Cowen gave evidence that he was concerned about air quality, with particular reference to diesel fumes, and stated that he had inspected headings where there was an overloading of brake horsepower created by having too many machines working in one area (3993/94). When asked to comment on the monitoring carried out by the Ventilation Technician, he stated, "And it was the last report that initiated the need for a continuous long-term monitoring test in heading 12-540. There seemed to be a disproportionate amount of equipment and high readings for the amount of air volume going in there, without even addressing air quality." He went on to say that action had been promised by Mr. Willoughby (4040). Mr. Cowen also expressed the view that "grab samples" were not a reliable indicator of workplace exposure for an entire shift (4096) and that a better method would be to have personnel wear personal sampling devices, or test the air every 30 minutes. He also stated that Mr. Willoughby's re-entry surveys lasted three hours, and he had now requested that they be conducted for an entire shift, or for at least eight hours (4096/97). Finally, Mr. Cowen agreed that he would prefer to see site-specific and task-specific monitoring carried out (4136).

FINDINGS AND CONCLUSIONS

It is clear that there has been improvement in ventilation and dust control at the mine since Mr. Willoughby's arrival in January 1989, and that yet more work has been done since he has had the assistance of a Ventilation Technician.

The report of Mr. M. J. Howes indicates that the air volumes at the mine are "suitable" but that there is room for improvement. There is no doubt that DPPC staff carry out the monitoring indicated and that a great deal of time and effort is spent by Mr. Willoughby and his staff in addressing the ventilation needs of the mine. In the recent past, the booster fans have been added in the CMD area, and further improvements are planned. I consider all of this activity to show a positive commitment by the Company to provide a healthy working milieu for their employees, supervisors and hourly-paid workers alike.

The evidence has clearly identified some shortcomings, however, and these relate to the lack of monitoring procedures for determining actual personal exposure at a given worksite. The current air monitoring program will not determine the level of contamination over the period of an entire shift at any given worksite in the mine. Zero in one area and twice the permitted TLV in another might well average out at a very low percentage overall as measured at the exhaust airway semi-annual survey. The same can be said for the weekly diesel fume surveys. They measure only what is present at that time, in that place, and with that particular machine. This cannot be considered to be anything other than spot sampling.

The evidence revealed that there are occasions when there are more machines in a given area than the ventilation plan contemplated for that area, with a subsequent potential for contamination of the air to unacceptable levels. The Ventilation Engineer has no control over the assignment of equipment to an area; he can only plan on what he is told, or assumes, will operate in a given heading. The supervisory staff can thus radically alter the quality of the air through a simple re-assignment of extra machines to an area. The evidence also revealed that the operation and parking of mobile equipment in travelways also used as airways can have a significant impact on the delivery (and contamination) of air in an area.

All of this leads me to conclude that the current monitoring system for diesel contaminants, blasting fumes and dust should be supplemented with site-specific and task-specific monitoring, and that the monitoring be of sufficient duration as to provide accurate data on worker exposure. Implementing this type of monitoring should be relatively simple since there is ample precedent and a number of monitoring models have been developed. It is certainly necessary, and I suggest that DPPC staff consult with an industrial hygienist in designing the program. Once designed, DPPC staff can carry it out.

The effort Mr. Willoughby has made with regard to the education/training of both supervisors and workers is commendable. He is now working on ventilation training modules, which can only enhance the understanding of employees of this vital topic. I suggest that if these modules are fully integrated into the training program with provision for refresher course at specific periods, the whole operation would be well served.

I was concerned to hear Mr. Vail comment on dust conditions so poor that he had difficulty seeing his work; indeed, I witnessed similar conditions during one of my tours of the mine. He indicated that the use of water has clearly helped. I believe, however, that the use of dust masks by such workers should be *actively* encouraged. The Company's position that the salt and potash dust has not been proved harmful is not entirely reassuring when one considers the report of Dr. J. W. Markham and Dr. L. K. Chan, "Concentrations of Health Effects of Potash Dust". Dust in the quantities that Mr. Vail described simply cannot be regarded as healthy, and undue exposure should be prevented insofar as it is possible. Dust control has been addressed to some degree through the use of water on the AM 100s and at other points in the production line. I suggest that this approach be considered wherever it is feasible, since it is clearly effective.

Implementing the type of monitoring program recommended will require the use of personal monitors. This means that the workers will have to be fully instructed in their use and will have to extend their full cooperation, if the results are to have any validity or be of benefit.

RECOMMENDATIONS

16. Ventilation and Air Monitoring
(All to apply equally to CMD operations.)

16.1 That a site-specific and task-specific dust monitoring program be implemented and maintained, both in the mill and underground, in consultation with a qualified industrial hygienist.

16.2 That re-entry blast fume surveys be conducted for an entire shift and with a frequency determined through consultation with an industrial hygienist.

16.3 That:

(a) a program of continuous monitoring for diesel fumes and other air contaminants be implemented, such monitoring to be for the full

period of a 12-hour shift, to be site-specific and task-specific, covering all active work areas of the mine, the frequency at any one location determined by the degree of activity at that location;

(b) the continuous monitoring include the use of personal dosimeters.

16.4 That the recommendations of the Howes Report be implemented.

16.5 That all relevant ILCI critical program suggestions be implemented.

16.6 That:

(a) the program of education and training in ventilation for workers and supervisors be fully developed, integrated into the formal training program and maintained; and

(b) the above-noted program include education on the proper use of respiratory protection.

16.7 That a system be put into place for the daily monitoring of brattice and the placement of parked vehicles in both the DPPC and CMD areas.

16.8 That the use of water as a dust suppressant be implemented as widely as possible.

16.9 That consideration be given to enhancing the lighting for all mining operations as required, especially in dusty areas.

16.10 That copies of all air monitoring surveys be provided to the Superintendent of Loss Control, the co-chairmen of the Joint Health and Safety Committees, and the Occupational Health Nurse.

16.11 That the New Brunswick Occupational Health and Safety Commission,

(a) require that a master plan of air monitoring be submitted by the mine, and that this plan outline all monitoring schedules, techniques and equipment to be used;

(b) require that the reports generated pursuant to that plan be submitted to the Commission on a scheduled basis; and

(c) provide assistance as appropriate in establishing the above-noted air monitoring program.

RIGHT TO REFUSE

Sections 19 to 23 inclusive of the **Occupational Health and Safety Act** provide for an employee to refuse to perform any act where he has reasonable grounds for believing that the act is likely to endanger his health or safety or the health or safety of any other employee.

Workers have the Right to Refuse section of the Act explained to them during the new employee orientation. At DPPC an extra step has been introduced into the process set out in the Act. Section 20(4) states that where an employee has made a report under subsection (1) and the matter has not been resolved to his satisfaction, he shall refer the matter to a Committee, or, where there is no Committee, to an officer. At DPPC the worker can report a matter not resolved to his satisfaction to his crew safety representative, who is then to pursue the matter. Section 20(4) of the Act becomes applicable if the crew safety representative cannot resolve the issue to the worker's satisfaction.

I have no difficulty with this approach, and it would seem to have the approval of Mr. S. Cowan, Safety Officer. One matter on which I believe the New Brunswick Occupational Health and Safety Commission should provide clarification is that of what happens to a worker's Right to Refuse when the Company acts in accordance with section 21(2) of the **Occupational Health and Safety Act.** Section 21(2) allows the employer to assign worker "B" to perform the act which worker "A" refused to do, provided that worker "B" is fully apprised of the details of the refusal and of his rights under the Act.

Mr. Poulin gave it as his opinion (2979) that when the second worker agrees to perform the task in question, it neutralizes the original Right to Refuse. In my view, this is not so, and a definitive interpretation of this section of the Act by the New Brunswick Occupational Health and Safety Commission could well prevent future problems arising with respect to this matter.

A number of management witnesses gave evidence that they believed that the Right to Refuse provisions of the Act were understood by the men, and that they had experienced no difficulties in that regard - Marshall (787), Hamilton (1297/8), Grenon (1463/4). The only incident raised where management believed that the Right to Refuse had been incorrectly invoked pertained to the walk-out in the mill in July 1989.

Mr. Feltus expressed the view that new workers on their probation period might be apprehensive about exercising their Right to Refuse, but also conceded that he had not raised the matter with Mr. Campbell, who explains the Right to Refuse provisions of the Act to new employees (3135/6). Mr. Feltus also stated that he reassures new employees on this matter and did not know how the concern of these workers had arisen.

FINDINGS AND CONCLUSIONS

When one considers that 10 years ago many people in Canada predicted that giving workers the Right to Refuse would grind the workplace to a virtual standstill, it is pleasing to note that there was no evidence to show that this important right had been abused at DPPC, by either party. Since it is always wise to build upon success, reinforcement training/education on the purpose of the legislation and how it is applied at DPPC could only be helpful. I believe that the New Brunswick Occupational Health and Safety Commission could play a very useful role in support of the Company's efforts.

RECOMMENDATIONS

17. Right to Refuse

17.1 That the New Brunswick Occupational Health and Safety Commission provide a clearly defined interpretation on the application of Section 21(2) of the *Occupational Health and Safety Act* to the DPPC mine.

17.2 That DPPC reinforce training/education to new employees on the Right to Refuse provisions of the Act and provide repeat training for all workers on a scheduled basis.

17.3 That the New Brunswick Occupational Health and Safety Commission offer assistance in providing education/training on the Right to Refuse provisions of the Act.

17.4 That the Union reinforce the efforts of DPPC and of the Commission by whatever means possible to ensure

that the Right to Refuse is properly understood and, when necessary, exercised in a proper manner.

CONTRACTORS

The DPPC submission of November 1989 outlined the role of contractors at the mine site. This information is summarized as follows:

Canadian Mine Development (CMD) was engaged by DPPC to perform research and development mining employing drilling and blasting methods. CMD is a long-established Company with specialized expertise in mine exploration, engineering, development, production, equipment, design and mining techniques. At present CMD has approximately 60 employees at the DPPC mine site. The Project Manager, Mr. J. Choi, is the senior person on site and has overall responsibility for managing CMD's activities. CMD's operations are conducted on a continuous seven-day week, 24-hour-per-day basis, with four crews working eight-hour shifts.

Liaison with DPPC is maintained primarily through contact with DPPC's General Mine Foreman for drill-and-blast, Mr. W. Marshall. There is also contact with other senior DPPC personnel. There are regularly scheduled meetings between CMD staff and the DPPC technical services group, at which all information pertinent to the operation is discussed and exchanged. In addition, there are daily meetings between the CMD Project Manager and the General Mine Foreman, and several times a week they carry out joint inspections. CMD produces a number of reports regarding items such as belt inspections, ventilation reports, unusual occurrence reports, etc., and these are forwarded to appropriate DPPC personnel.

CMD has a safety policy which addresses accident prevention, communications, inspections, training, promotion, enforcement, etc. As well, the Company's safety program guidelines are set out in a manual which is provided to all employees. Management standards have been set out in a Book of Standards (Exhibit 87). CMD's director of safety and training makes regular visits to the mine for the purposes of reinforcing the safety program. One of the features of the safety program is the use of the Neil George Safety System. Another feature is the holding of regular crew safety meetings.

As owner of the site, DPPC has overall responsibility for the health and safety of all persons employed at the site. This includes the CMD employees. DPPC has, accordingly, placed contractual responsibilities upon CMD to ensure that its operations are carried out with safety being of prime importance.

DPPC recognizes that cooperation between the two companies with regard to health and safety programs is important. Consequently, all emergency response procedures apply to CMD, as do the accident/incident investigation procedures, and the flow of reports resulting from those procedures.

The DPPC submission of June 1990 rejects any suggestion that the CMD operation is anything but safe, and cites the evidence of Mr. Marshall, Mr. Choi, and one CMD employee, Mr. Sinclair, in support of this position.

The June 1990 submission of the United Steelworkers of America, Local 1929, states that it has received a number of complaints from DPPC employees regarding unsafe activities by CMD employees. The issue which concerns the Union the most, however, is that of the lack of CMD participation on the DPPC Joint Health and Safety Committee for a period of approximately one year (1988-89). The Union points out that both DPPC and CMD workers work in the same areas. As well, the Union points out that under the **Occupational Health and Safety Act** representatives of the contractors should be part of the same Joint Health and Safety Committee as the employees of DPPC. A Joint Health and Safety Committee was recently formed by CMD and the Union has concerns regarding how it and the Joint Health and Safety Committee of DPPC will function in relationship to each other.

The evidence of Mr. W. Marshall on the issue of safety concerns was to acknowledge that such concerns were brought to his attention, and that they were dealt with. An area had on one occasion been shut down by the Underground Safety Supervisor due to unsafe ground conditions (871/3), and he described another incident in which Mr. Campbell had also become involved (872/5). Mr. Marshall also stated that there had in the past been problems with the blast clearance procedure, and that a written blast clearance procedure had been in place for some five years and was periodically revised (876/77). (During the evidence given by Mr. Feltus, he also made reference to the blast clearance procedure, stating that the procedure was satisfactory but required a greater degree of compliance (3023/6).) Mr. Marshall expressed satisfaction with the working relationship he has with CMD personnel.

Mr. J. Sinclair is a CMD employee who testified that he believed the operation to be safe. His concerns centered on the occasional problem of the presence of blasting gases (3874/5), the location of the fuel storage area and refuelling station (3873), and the fact that the refuge stations were not of the same type of structure he was used to finding in hard rock mines. (The reason for this is the relatively rapid ground movement encountered in potash mines.) (3865).

Mr. J. Choi confirmed the information provided in the DPPC submission of November 1989 regarding the operations of CMD at the DPPC mine. He stated that the Neil George Safety System is properly applied and that 100% of the cards are returned (completed, one assumes) (4243/6). Mr. Choi also indicated that a new form (Exhibit 123) had been introduced on which workers could enter items that could not be resolved by him or his supervisor (4243/6). He confirmed that Mr. S. Cowen, Safety Officer, inspects the CMD area twice per month, and that on those inspections Mr. Cowen is accompanied by the Joint Health and Safety Committee co-chairmen. Prior to the recent creation of a new Committee, Mr. Cowen had been accompanied by a management representative and a crew safety representative.

Mr. Choi strongly disagreed with the Union assertion that CMD employees show "...regular disregard for Mining Regulations and regular disregard for safety practices," as claimed in the Union submission (4241/2). On the subject of the Joint Health and Safety Committee, he stated that CMD had participated in the DPPC Committee until 1989 when the CMD members stopped attending because they were "...not informed...not invited to participate..." I have addressed this issue under the section of this report on Joint Health and Safety Committees. With regard to training, he explained that in most instances CMD hires experienced miners, the average range of mining experience ranging from five to 25 years. Inexperienced workers start as labourers and are trained on the job by other workers and supervisors.

FINDINGS AND CONCLUSIONS

While the evidence showed that there had been safety problems from time to time in the CMD area of the mine, this evidence did not, in my opinion, show that there had been regular disregard for safety practices or regular disregard of the Mining Regulations. The fact that Mr. Cowen has never had to issue non-compliance orders indicates that CMD must be paying due regard to safety and addressing safety concerns in an acceptable manner. There is little question that their activity seems to give some workers cause for concern, in particular with regard to the CMD vehicles using the travelway which carries fresh air. Similarly, however, Mr. Choi expressed concern with regard to DPPC activities affecting the ventilation in the CMD area.

In my opinion, the application of two-way communication between the Joint Health and Safety Committees and the implementation of the Loss Control Program will resolve whatever issues remain.

With regard to worker training, I believe that CMD should apply the same approach as has been recommended for DPPC. With respect to new workers, this will mean establishing a training program which will provide for proper assessment of competence upon completion.

RECOMMENDATIONS

18. Contractors

18.1 That the CMD crew safety meetings which are currently being held be maintained.

18. That:

(a) a formal training program for new (inexperienced) employees be developed, implemented, and maintained; and

(b) experienced employees, newly hired by CMD, be given a formally structured orientation, and that their competence regarding equipment operation be formally tested, using criteria comparable to those established by DPPC, and licenses issued.

18.3 That CMD operations conform to the Loss Control Program of DPPC.

MEDICAL EXAMINATIONS

Mr. J. Sumner testified that he was responsible for arranging the annual medical examinations which are carried out pursuant to section 46 of the **Occupational Health and Safety Act.** Medical examinations are referenced in the hiring and placement element of the ILCI audit. Critical program suggestions 18.1 to 18.4 inclusive indicate where improvement is possible and they specifically address the need to relate the examinations to the physical and mental needs of the job. Before that can be done, a survey has to be completed of all jobs/tasks in order to determine what demands are placed on the workers, both physical and mental, and what occupational health and safety hazards may be associated with the work.

The Canadian Medical Association has published a document titled "The Provision of Occupational Health Services, A Guide for Physicians" which deals with such issues as pre-assignment and subsequent medical examinations. It points out that it is not good practice for a physician to give an opinion on the fitness of an individual without having adequate information about the specific work for which the individual is to be employed. I conclude, therefore, that the medical examination program at DPPC should be directly related to the work to be, or being, performed, if the issue of occupational health is to be properly addressed. For example, consideration might be given to lung function tests for all workers exposed to dust in excess of the TLV referenced in the legislation. Reference has already been made to audiometric testing for workers exposed to excessive noise levels.

It is noted that the Occupational Health Nurse's major accountabilities include the maintenance of confidential medical records. I would include in this category the audiometric test results.

RECOMMENDATION

19. Medical Examinations

19.1 That the Occupational Health Nurse be responsible for:

(a) maintenance of all medical records filed at the mine;

(b) arranging all medical examinations required pursuant to the *Occupational Health and Safety Act;* and

(c) maintenance of all audiometric test records.

19.2 That the medical examination program be directly linked to the suggested analysis of all jobs at DPPC, and that the examining physician be provided with all pertinent information regarding the work to be/being performed and the hazards known to be associated with that work.

THE UNION

The United Steelworkers of America requested that an independent Commission of inquiry be appointed to investigate the safety of operations at DPPC. The Union has taken the position throughout that no issue is more important than the health and safety of workers, and points to its efforts to provide training for safety representatives as one example of meeting its commitment to the Union membership at the mine.

The Union President, Mr. T. Harris, testified to the concerns which resulted in the request for a Commission of inquiry. He also stated that the Union did not directly involve itself in occupational health and safety matters at the mine unless and until they believed that the issues in question were not being addressed by the Company's IRS. Mr. Harris appeared satisfied that DPPC had a commitment to safety, but stated that the Company did not adequately follow through on that commitment and that there was a lack of consultation by the Company with the workers and Union on occupational health and safety matters. Another concern he had was that discipline for safety infractions was not applied with the same severity or consistency to supervisors as it was to workers.

The DPPC position, as expressed by Mr. Neil McKelvey, Q.C., counsel for the Company, is, as one might expect, somewhat different. DPPC believes that there has been ample consultation and that more will take place in the future. DPPC makes it quite clear, however, that consultation does not involve giving management control over to the Union. Counsel for the Union subsequently agreed to this point. DPPC counsel pointed to the implementation of the Loss Control Program as a clear indication of the Company's commitment to health and safety.

Having listened to all of the evidence, I conclude that the Union has conducted itself in a manner which it felt was dictated by the circumstances with respect to occupational health and safety matters. There was no evidence of interference by the Union respecting the functioning of the Joint Health and Safety Committees. Mr. Harris was quite frank in expressing not only where he disagreed with the Company's handling of safety matters, but also his approval of some of DPPC's actions. He approves of the introduction of the Loss Control Program and of the quarterly meetings with the Vice-President and General Manager.

DPPC has effected a great number of changes in the past few months. I believe it is now incumbent upon the Union to support the Company as it strives to improve the safety program at the mine. Mr. Harris has indicated his willingness to do this, which I find most encouraging. The role of the Union, as counsel for the Union Mr. Andrew King has pointed out, is to protect the interests of its members with respect to occupational health and safety. It can do this in full consultation and co-operation with DPPC.

RECOMMENDATION

20. Union

20.1 That the United Steelworkers of America, and, in particular, Local 9129, actively support the initiatives of DPPC designed to improve the occupational health and safety program at the mine.

THE NEW BRUNSWICK OCCUPATIONAL HEALTH AND SAFETY COMMISSION

Both the Company and the Union expressed some concerns with respect to the role of the Commission at the mine. The Company expressed the view that the Safety Officer had inspected too often and had been used by the workers as a means of circumventing the IRS. The Union, on the other hand, had concerns with regard to the enforcement of the Act and Regulations. Both parties expressed confidence in the Safety Officer, Mr. S. Cowen, who has conducted most of the inspections at DPPC over the past five years.

With respect to the Company's position that Mr. Cowen had involved himself in issues where he should not, I have carefully reviewed the evidence given at the Inquiry and conclude that in each and every instance Mr. Cowen conducted himself in an appropriate manner.

He became involved in a labour relations issue - the mill walk-out - only after he arrived at the mine and determined that it was not a health and safety matter. His involvement was then *specifically* at the request of management, when he was asked to talk to the men in an attempt to get them to return to work.

It was also management staff who asked him to go to the mine and speak to the men when a group of workers refused to leave the 1102 drift due to their concerns over ground conditions.

The rockbolting incident cited by the Company did not in my view show Mr. Cowen as behaving in an inappropriate manner. First, he was *asked* by senior management to go to the site to deal with the matter. More bolts were needed, and he said so. There was a difference in the evidence of Mr. Greenhalgh and Mr. Cowen as to how many bolts Mr. Cowen stated were needed, but it is clear to me that his opinion was sought by the men because they lacked confidence in the senior production staff's control of ground conditions.

It is clear that in all of the instances cited above Mr. Cowen's contribution was positive, and he tried to reassure workers and get production work resumed. It is equally clear that senior management did not hesitate to invite Mr. Cowen to assist them in dealing with worker/safety related problems, and it is hardly appropriate to afterwards criticize him for so doing. Once a safety matter is brought to a Safety Officer's attention, he has no choice but to respond.

There was no evidence that workers or Union officials frequently called Mr. Cowen on safety issues. Mr. Cowen responded on the few occasions he was called, but that was his duty.

The Union is concerned that the requirements of the legislation were not enforced with respect to the following:

- noise
- training and section 287 of the Mining Regulations
- the Joint Health and Safety Committee and CMD
- non-compliance orders.

With respect to noise, Mr. Cowen conceded that he had not as yet enforced the new standard. I have dealt with this under the section on noise.

I have dealt with the issue of the application of Mining Regulation 287 to DPPC under the section on training.

With regard to the underground Joint Health and Safety Committee, Mr. Cowen conceded that there had been a period when he had not realized that CMD was not taking part in the DPPC Committee. The issue of the newly-formed CMD Joint Health and Safety Committee has been addressed in the section on Joint Health and Safety Committees.

The issue of non-compliance to the Act and Regulations in general was also raised by the Union as a concern. A non-compliance order is issued if there is no satisfactory compliance with an order previously written by the Safety Officer. Mr. Cowen testified that in July/August of 1989 he developed a 'non-compliance' form which was to be used when non-compliance occurred. There have been very few non-compliance orders issued to DPPC since Mr. Cowen introduced the procedure. Mr. Cowen testified that, prior to developing the non-compliance form, he had discussed at a subsequent inspection the deficiencies noted at the previous inspection, and on only one occasion in 1985 did he feel that the Company had not fully complied with his orders. On that occasion, Mr. Cowen had recommended prosecution, but his superiors decided that there were insufficient grounds for such proceedings (3916/7). The non-compliance order was introduced by Mr. Cowen subsequent to reducing the time frame within which the Company could respond to his written orders.

The role played by Safety Officers in the workplace is determined by the legislation they are empowered to enforce, and the enforcement policy adopted by the agency with jurisdiction. I have already recommended action by the Commission with respect to training, Joint Health and Safety Committees, etc., and believe that the development of an enforcement policy/strategy in those areas will be helpful. I also feel that training for the Safety Officers in such topics as the enforcement of legislation and how to conduct and document investigations is important. I make the assumption that training in communications, inspections, etc., is provided to the Safety Officers, but, if not, it should be.

When a Safety Officer conducts an investigation and recommends that penalties be applied pursuant to the legislation, there should be in place a formal review body and a process which will:

- ensure that the investigation report is reviewed by that body with the Officer

- provide feed-back and direction to the officer with respect to what further work is required, if any

- decide whether to support all, some, or none of the Safety Officers' recommendations

- advance the matter to the next stage if a decision is made to impose penalties

- advise the Officer in writing of the decision and the reasons for the decision.

The body tasked with carrying out this review should, ideally, consist not only of officials of the inspections unit of the Commission, but other senior staff with expertise in fields such as industrial hygiene, administration and law. This ensures that an objective analysis is made.

My recommendations with respect to the role of the Commission are intended to ensure that there is not only uniform and consistent enforcement of the legislation, but that it will be so perceived. In any event, I am of the opinion that the Safety Officers have a difficult job and should be provided with the necessary training and clear policy direction on all aspects of their work.

RECOMMENDATIONS

21. New Brunswick Occupational Health and Safety Commission

21.1 That all Commission policies and procedures be reviewed to ensure they provide clear direction on all aspects of the interpretation, administration and enforcement of the Act and Regulations, and that consideration be given to the establishment of standardized forms for notification of non-compliance, etc.

21.2 That the training programs for Safety Officers be reviewed to ensure they address a standardized approach to conducting inspections, investigations and the documentation of same, and that the training also provides exposure to court procedure and the requirements for providing documents in support of proposed legal action.

21.3 That Safety Officers, and the Director of Inspection Services, be trained on the Loss Control system.

21.4 That Safety Officers be provided with ready access to a broad spectrum of current occupational health and safety information.

21.5 That Safety Officers are provided with training on how to assess and improve training programs, and how to present training material using modern adult education techniques.

TWELVE-HOUR SHIFTS

Evidence was heard with respect to the 12-hour shifts worked by some employees at DPPC. The Company expressed concerns regarding the possible negative impact on safety, primarily due to worker fatigue. The workers testified to their strong preference for the 12-hour shift.

In my opinion, the evidence heard at the Inquiry did not prove that 12-hour shifts had any impact on safety, negative or positive, when compared to 8- or 10-hour shifts. One study on the topic referred to at the Inquiry stated that, on the basis of current research on this subject, it is difficult to form any specific conclusions. In view of the above, therefore, I defer the matter to the New Brunswick Occupational Health and Safety Commission for consideration.

RECOMMENDATION

22. Twelve-Hour Shifts

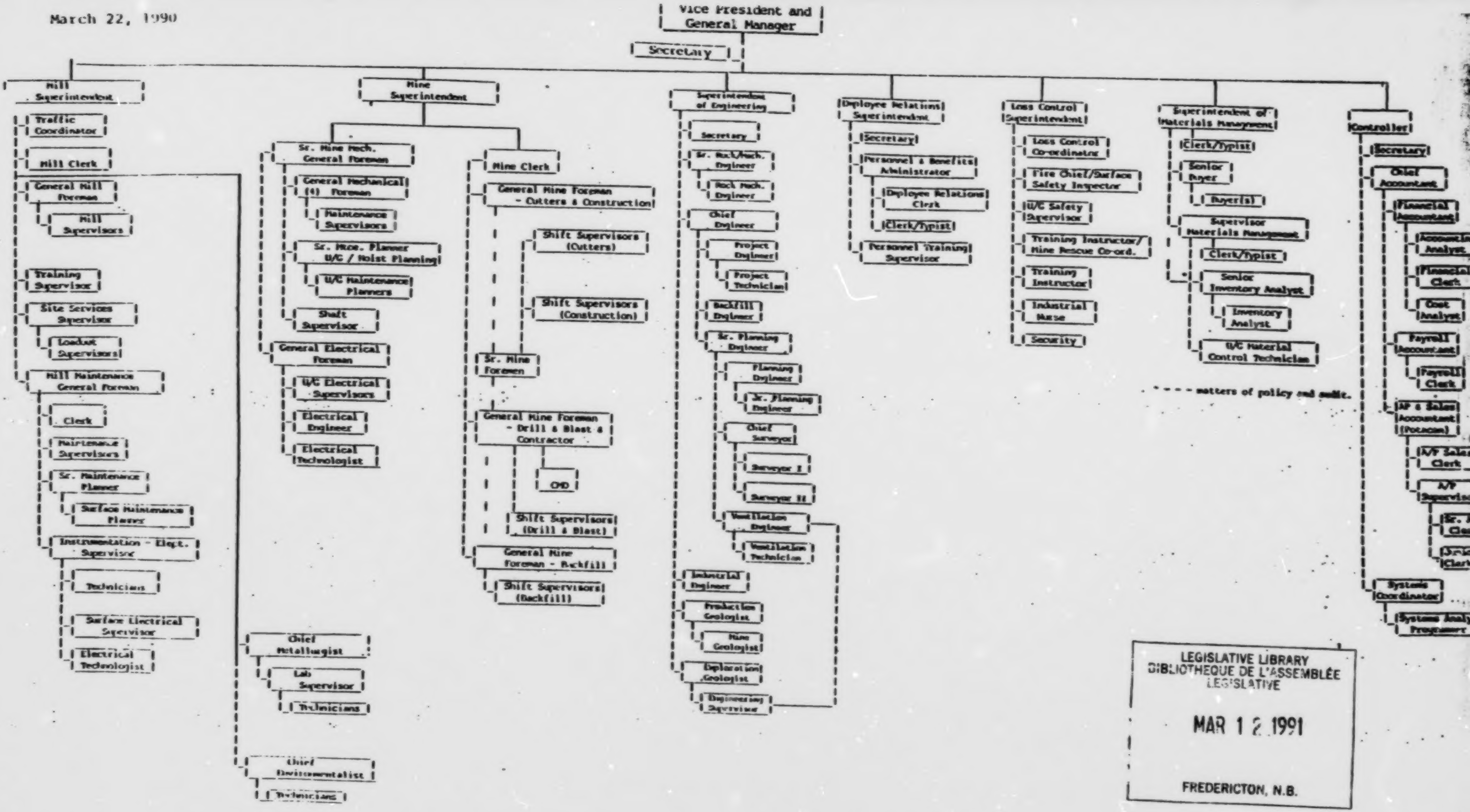
22.1 That the New Brunswick Occupational Health and Safety Commission consider all applications for deviations from the requirements of the *Mining Act*, Regulation 77-58, Section 17, on the basis of conformity with Section 18(10) of said Regulation.

DISCIPLINE

During the Inquiry, the president of Local 9129, United Steelworkers of America, raised the issue of discipline. I consider discipline to be a labour relations issue, whether or not it is imposed with respect to safety infractions. The Loss Control Program addresses the issue of fair and consistent discipline, and I suggest that the matter be dealt with through the implementation of the Loss Control Program and through discussions between DPPC and the Union.

APPENDIX "A"

March 22, 1990


Vice President and General Manager
Secretary
Mill Superintendent
Traffic Coordinator
Mill Clerk
General Mill Foreman
Mill Supervisors
Training Supervisor
Site Services Supervisor
Loadout Supervisors
Mill Maintenance General Foreman
Clerk
Maintenance Supervisors
Sr. Maintenance Planner
Surface Maintenance Planner
Instrumentation - Elect. Supervisor
Technicians
Surface Electrical Supervisor
Electrical Technologist
Chief Metallurgist
Lab Supervisor
Technicians
Chief Environmentalist
Technicians
Mine Superintendent
Sr. Mine Mech. General Foreman
General Mechanical (4) Foreman
Maintenance Supervisors
Sr. Mtce. Planner U/G / Hoist Planning
U/G Maintenance Planners
Shaft Supervisor
General Electrical Foreman
U/G Electrical Supervisors
Electrical Engineer
Electrical Technologist
Mine Clerk
General Mine Foreman - Cutters & Construction
Shift Supervisors (Cutters)
Shift Supervisors (Construction)
Sr. Mine Foremen
General Mine Foreman - Drill & Blast & Contractor
CMD
Shift Supervisors (Drill & Blast)
General Mine Foreman - Backfill
Shift Supervisors (Backfill)
Superintendent of Engineering
Secretary
Sr. Rock/Mech. Engineer
Rock Mech. Engineer
Chief Engineer
Project Engineer
Project Technician
Backfill Engineer
Sr. Planning Engineer
Planning Engineer
Jr. Planning Engineer
Chief Surveyor
Surveyor I
Surveyor II
Ventilation Engineer
Ventilation Technician
Industrial Engineer
Production Geologist
Mine Geologist
Exploration Geologist
Engineering Supervisor
Employee Relations Superintendent
Secretary
Personnel & Benefits Administrator
Employee Relations Clerk
Clerk/Typist
Personnel Training Supervisor
Loss Control Superintendent
Loss Control Co-ordinator
Fire Chief/Surface Safety Inspector
U/G Safety Supervisor
Training Instructor/ Mine Rescue Co-ord.
Training Instructor
Industrial Nurse
Security
Superintendent of Materials Management
Clerk/Typist
Senior Buyer
Buyer(s)
Supervisor Materials Management
Clerk/Typist
Senior Inventory Analyst
Inventory Analyst
U/G Material Control Technician
- - - matters of policy and audit.
Controller
Secretary
Chief Accountant
Financial Accountant
Accountin Analyst
Financial Clerk
Cost Analyst
Payroll Accountant
Payroll Clerk
AP & Sales Accountant (Potacan)
A/P Sale Clerk
A/P Supervis
Sr. Cle
Juni Clerk
Systems Coordinator
Systems Analy Programmer

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APPENDIX "B"

THE INTERNAL RESPONSIBILITY SYSTEM AT DPPC

INTERNAL CONTRIBUTIVE RESPONSIBILITY	DIRECT RESPONSIBILITY	EXTERNAL CONTRIBUTIVE RESPONSIBILITY
	WORKER	
	↕	
UNION	1ST LINE SUPERVISOR	DEPT. OF LABOUR
	↕	N.B. OCCUPATIONAL HEALTH AND SAFETY COMMISSION
	2ND LINE SUPERVISOR	
JOINT HEALTH & SAFETY COMMITTEE	↕	WORKERS' COMPENSATION BOARD
	SUPERINTENDENT	
SAFETY DEPT.	↕	N.B. MINING ASSOC.
	MANAGER OF OPERATIONS	
WORKER INSPECTOR	↕	MINING & METALS ACCIDENT PREVENTION ASSOCIATION OF NEW BRUNSWICK
	GENERAL MANAGER	
	↕	
	EXEC. VICE PRESIDENT	
ENGINEERING/ PURCHASING	↕	
	C.O.O.	
No decision making authority	HAVE decision making authority	No decision making authority
Improves quality of decision made indirectly	Accountable for work	Define minimum standards
Evaluates performance	Establish standards	Promote & measures to standards

↖ ↗

Mutual responsibility
co-operation

APPENDIX "C"

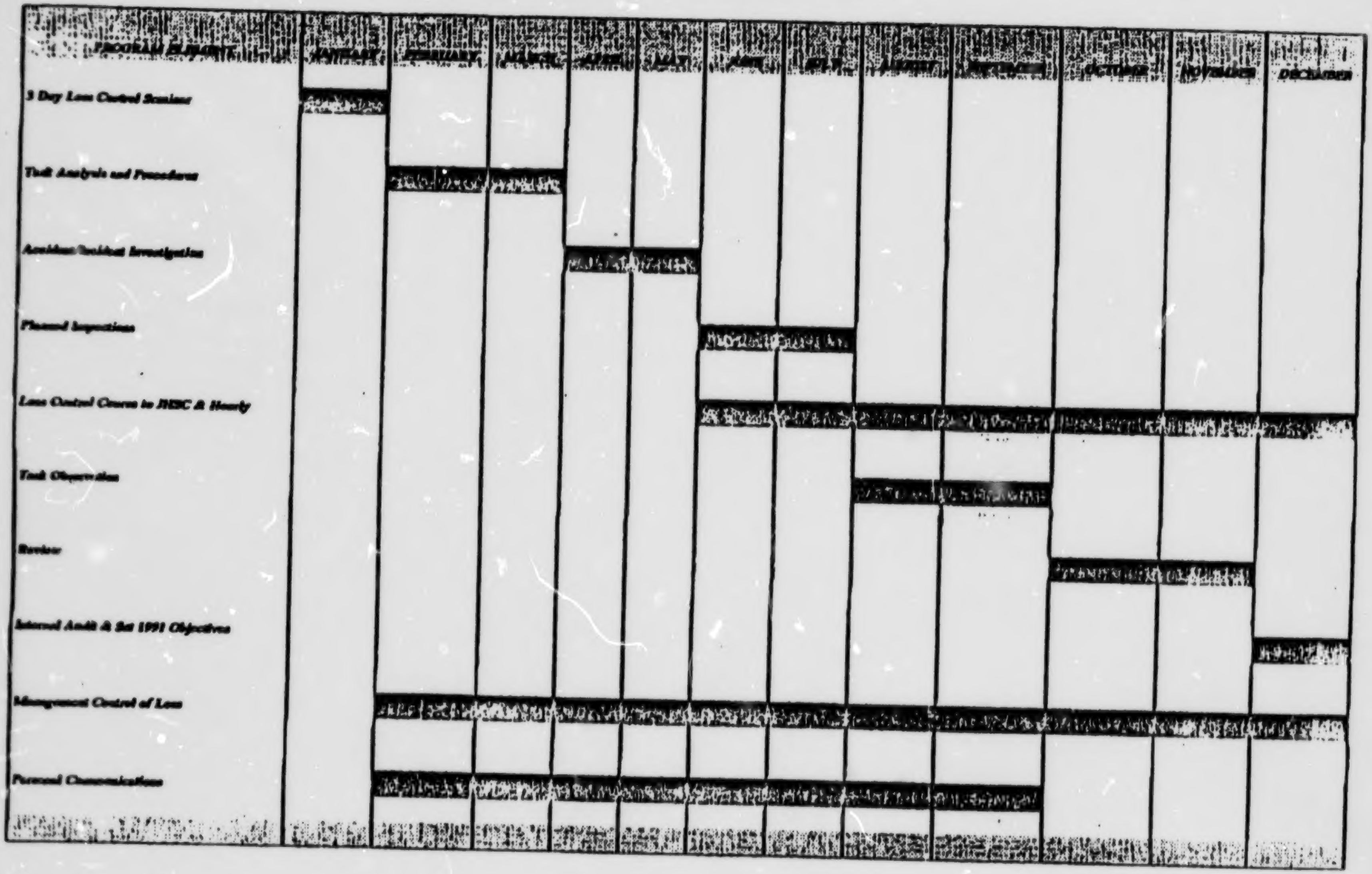
Loss Control Implementation

The following represents DPPC's chartered course for implementation of its Loss Control Program.

November - December, 1989:	Introduce loss control philosophies to senior management, devise implementation schedule, explain International Mine Safety Rating System (The Audit) and assign responsibilities for elements.
January, 1990:	Three day loss control seminar presented to all staff and key union officials. Presentation by representatives from International Loss Control Institute.
February-March, 1990:	Introduce and implement Chapter 7, "Task Analysis and Procedures." Assign a task analysis facilitator for each department, train facilitators in methodology, pick task analysis teams.
April - May, 1990:	Introduce and implement Chapter 4, "Accident/Incident Investigation." Introduce new form to supervisors and Joint Health and Safety Committee.
June - July, 1990:	Introduce and implement Chapter 6, "Planned Inspections." Introduce new form and distribute training manual on its proper use. Also introduce to Joint Health and Safety Committee.
June - December, 1990:	Conduct 8-hour loss control seminar with Joint Health and Safety Committee members who did not attend the 3-day seminar. Present 4-hour loss control seminar to hourly personnel.
August - September, 1990:	Introduce and implement Chapter 8, "Planned Task Observations." Introduce new form and distribute training manual on its proper use. Introduce to Joint Health and Safety Committee.
October - November, 1990:	Review Chapters 4, 6, 7, and 8. Report on effectiveness and follow-up of program implementation to date. Loss Control Superintendent to report on program effectiveness through regular program monitoring.
December, 1990:	Conduct internal audit. Set implementation schedule for 1991.

Note: Management Control of Loss (Chapter 3) and Personal Communications (Chapter 10) will both be integrated into each individual section as it is implemented into the workforce.

PROGRAM IMPLEMENTATION SCHEDULE - 1990



PROGRAM ELEMENTS	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
3 Day Loss Control Seminar	■											
Task Analysis and Procedures		■	■									
Accident/Incident Investigation				■	■							
Planned Inspections						■	■					
Loss Control Course to JHSC & Hourly						■	■	■	■	■	■	■
Task Observation								■	■			
Review										■	■	
Internal Audit & Set 1991 Objectives												■
Management Control of Loss		■	■	■	■	■	■	■	■	■	■	■
Personal Communications		■	■	■	■	■	■	■	■			

APPENDIX "D"

Evaluation Report
for

DENISON
POTACAN
POTASH
COMPANY

Denison-Potacan Potash Company
Sussex, New Brunswick, Canada

September 12-15, 1989

**INTERNATIONAL
LOSS CONTROL INSTITUTE**

Mr. C. K. Benner
Executive Vice President
Denison Mines Limited
P. O. Box 40, Royal Bank Plaza
Toronto, Ontario, Canada M5J 2K2

Dear Mr. Benner:

Attached is my comprehensive report resulting from the audit of the Denison-Potacan Potash Company, Sussex, New Brunswick.

This report contains results of the audit conducted on September 12-15, 1989. The report is divided into four sections:

Section 1 - Critical Program Suggestions
Suggestions are presented for near-term (6-12 months) improvements. A follow-up audit is recommended in 12 months in order to review program progress or refocus critical program suggestions.

Section 2 - Graphic Profile Summary
This chart graphically depicts the status of each of the International Safety Rating System (ISRS) program elements. It aids management in seeing, at a glance, the strong program activities as well as those which require additional emphasis.

Section 3 - Summary Score Sheet
This sheet shows numerically the summary depicted graphically in Section 2. In addition, it shows the comparison of the points awarded vs. the possible points for each program element. The overall percentage for the elements is also calculated.

4547 ATLANTA HWY., HWY 78, P O BOX 345, LOGANVILLE, GEORGIA 30249 • TELEPHONE (404) 466-2208 OR TELEFAX (404) 466-4318

THIS INSTITUTE SERVES AS AN INTERNATIONAL CENTER FOR LOSS CONTROL EDUCATION. ITS DEVELOPMENT WAS SPONSORED BY THE DEPARTMENT OF INSURANCE SCHOOL OF BUSINESS ADMINISTRATION GEORGIA STATE UNIVERSITY IN ORDER TO HELP CREATE AN EDUCATIONAL FACILITY TO SERVE THE LOSS CONTROL FIELD

Section 4 - Comprehensive Evaluation Report
This section identifies the subelements and the points scored for the subelements for each of the elements of the ISRS audit. In addition, noteworthy and existing efforts as well as suggestions for continued improvement are presented. These comments are referenced to specific questions of the audit.

Two sections of the report, the graphic profile summary and the critical suggestions for improvement, should be of particular interest to you and the mine site management.

As you are aware, answers for the audit were obtained through interviews with the most knowledgeable people available, record checks, and through a physical conditions verification tour. During the audit, the following people were interviewed:

NAME	TITLE
Tom Harris	Journeyman Mechanic
Joe Anderson	Electrician
David Gallop	Industrial Mechanic
Dave Flanders	Industrial Mechanic
Ronald Otis	Dry Attendant
Murray King	Screening and Compaction
Randy Masterman Critchley	Mine Operator
Wayne Vail	Mine Operator

All of the above employees impressed me that they were knowledgeable about Industrial Safety and concerned about safety and health at Denison-Potacan Potash Company.

Thank you for the hospitality extended during the audit. I was especially impressed with the open and friendly attitudes displayed by all of the staff.

In closing, I feel it is important to say that out of all of the baseline International Safety Rating System audits I have conducted your final measurement score is acceptable.

If we can be of any further service in the future, please do not hesitate to contact us.

Sincerely,

M. D. Crucefix

([illegible].)
M. D. Crucefix, CRSP, ASA, M.Sc.
Consultant

MDC:dmr

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Section	Title
1	Critical Program Suggestions
2	Graphic Profile Summary
3	Summary Score Sheet
4	Comprehensive Evaluation Report

Critical Program Suggestions

CRITICAL PROGRAM SUGGESTIONS

1.1 1. The existing safety policy should be expanded to include fire losses and compliance with legislation.

1.3 1. General managers' visibility needs to be increased to motivate other managers and employees' involvement in safety and health activities at Denison - Potacan Potash Company - Sussex, New Brunswick.

1.4 1. Standards for management performance should be written for all program elements at Denison - Potacan Potash Company. These standards should define the vital areas of management work, and set minimum performance requirements. Such benchmarks are essential to the effectiveness of any management system. A company of your size and activity should have the following elements in place:

Leadership and Administration
Management Training
Planned Inspections
Job/Task Analysis and Procedures
Accident/Incident Investigation
Job/Task Observation
Emergency Preparedness
Organizational Rules
Accident/Incident Analysis
Employee Training
Personal Protective Equipment
Health Control & Services
Engineering Controls
Personal Communications
Group Meetings
General Promotion
Hiring and Placement
Purchasing Controls

1.7 1. A complete safety management reference manual should be developed to provide guidance on the development and conduct of the program. A manual can provide authority, guidance, and standardization for management actions.

1.9 2. A manager's written procedure for handling and following through on employees' reports of safety and health hazards should be developed to reinforce employees' actions with respect to this responsibility.

1.10 1. Objectives for the expansion and refinement of the safety program should be set each year.

2.2 1. All general managers at Denison - Potacan Potash Company - Sussex, New Brunswick should be given a formal training course in safety and health management as part of their personal development.

2.3. After initial formal training programs for general managers have been set up, review training courses should be established to refresh and update managers' knowledge on critical activities in the safety and health program. Lesson plans, course materials, and personnel records should also be developed for this review training. Concentrate on this only after the full and complete program of initial training for general managers is in place.

2.4 1. Formal training courses in safety and health fundamentals should be given each middle manager and line supervisor as part of their personal development.

2.5. After initial formal training courses for middle managers and supervisors have been set up, review training courses should be set up to refresh and update managers' knowledge of safety and health. Review training should cover each major topic at least once every three years. Lesson plans, course materials, and personnel records should also be developed for this review training. Concentrate on this only after the full and complete program of initial training for middle managers and supervisors is in place.

2.6 1. If the present program coordinator remains for any length of time he should attend a course in fundamentals of occupational safety and health.

3.2 1. The general inspection program at Denison - Potacan Potash Company - Sussex, New Brunswick should include supervisors' self-inspections of work areas, management team inspections of critical areas, plus safety staff inspections as a control measure.

4. The nature of work in each area should be assessed and the optimum frequency for inspection set as a standard for each area. This standard can vary from weekly to annually, depending on the situation.

3.3 1. An inspection follow-up system should be developed to ensure that remedial actions are completed, provide adequate control of the risk, and have no undesired side effects.

3.4 1. A periodic analysis of inspection findings should be made to identify trends and common basic causes of the major deficiencies observed.

3.5 1. A critical parts inspection program should be set up at Denison - Potacan Potash Company - Sussex, New Brunswick. This is one of the more important phases of inspection. It provides systematic examination of the parts of equipment or items in facilities that are most likely to create a serious safety problem. Your present system is mostly a spare parts program as denoted in memo dated 21 March 1988 from Jack Durant to Roy Tucker and Ivan Benetti. The subject of the memo is critical and insurance spares.

3.6 1. The preventive maintenance program should identify when there have been abnormal wear, abuse, and other forms of accidental damage.

3.8 1. Supervisors should follow-up on items reported by employees, get prompt action, and give the employees feedback on actions being taken or planned.

4.1 1. A directive from senior management should be published to give emphasis on the importance of job analysis and job procedures. This document should communicate the importance of this program element and state the executive's desire to have it managed effectively.

4.2 1. A critical job/task inventory should be made as the base of an effective job analysis and procedures program.

4.3 1. After an inventory has been made, objectives should be set to prompt regular work on analyses and insure that the analyses and procedures are comprehensive and thorough.

5.1 1. Managers should be trained in accident cause analysis and in appropriate investigation methods for industrial and mining accidents/incidents.

5.2 1. The scope of the investigation procedure should be expanded to have prompt response to, full investigation of, and a detailed report on the following types of incidents (Presently the following two are left out and it is not clear enough at this time):

    1. Non-disabling injuries and occupational illnesses with higher loss potential.
    2. Disabling injuries and occupational illnesses.

2. Periodic checks of various possible sources of information should be made to verify that incidents are being reported in compliance with program standards. These sources include:

    1. First aid stations.
    2. Fire control centers.
    3. Maintenance and repair centers.
    4. Salvage centers.
    5. And, claims processing offices.

5.3 1. A procedure should be written to guide actions to control accident causes.

3. An administrative system should ensure that remedial actions are completed.

5. Higher level managers should make monthly reviews of remedial actions on incidents with high loss potential.

5.4 1. After any major accident at Denison - Potacan Potash Company - Sussex, New Brunswick, a written announcement of known facts and circumstances should be distributed to department heads. This is to enhance both their communications with employees and their assessment of possible like exposures within their own departments.

5.6 1. A procedure should be written to provide for notification of department heads and general managers, and to define their participation in certain accident investigations. The authority of general managers and their access to resources is very helpful in some situations.

3. A standard should be developed to provide an accident review meeting following the initial investigation of major accidents, and others with major loss potential.

5.7 1. A program of comprehensive reporting, investigation, and remedial actions on near-accidents should be developed at Denison - Potacan Potash Company - Sussex, New Brunswick. Standards should define significant incidents to receive full cause analysis as the basis for accident prevention.

6.1 1. A directive should be written and signed by the general manager at Denison - Potacan Potash Company - Sussex, New Brunswick, to set policy and standards for job observations. The directive should:

    1. Allocate the time for supervisors to make thorough job observations.
    2. Authorize training of supervisors in job observation techniques.
    3. Establish a system to follow through with remedial actions on the loss potentials identified by observations.
    4. Prevent employee uneasiness of being observed by emphasizing that the focus is on training, instructions, procedures, materials, equipment and facilities.
    5. Emphasize that supervisors are to identify causes of incorrect behavior, not find fault with people.
    6. And, stress that job observation makes supervisors more perceptive and sensitive managers of most people.

6.2 1. Realistic objectives should be set for each supervisor to make complete observations of critical tasks. The objectives should ensure that an observation is made of every critical task that has a set procedure or practice.

7.1 1. A member of upper management at Denison - Potacan Potash Company - Sussex, New Brunswick should be appointed to coordinate the development of an emergency plan, secure the resources that would be needed to execute the plan, and administer the emergency preparedness program.

7.2 1. A comprehensive emergency plan for the minesite should be written and distributed to all departments or sections.

5. The emergency plan should be implemented through clear, concise written instructions for each work center - building, department or area. The procedures should specify exact actions to take, sources of decisions, controls to operate, and equipment to use.

7.4 1. A program should be developed to identify, test and maintain master controls and emergency controls in order to ensure reliability and accuracy in shutting down or rerouting systems as part of emergency actions.

7.5 1. A facility-wide survey should be made of fire loss exposures and fire protection equipment to verify that adequate extinguishers, sprinklers, hydrants, and other equipment are both provided and properly located.

7.6 1. Emergency teams for the entire company should be organized and trained for initial and immediate response to emergency situations, as well as for protection of people and property when public emergency teams are not available to respond.

7.8 1. A system should be developed to classify and safeguard vital records to control business interruption and financial losses in the event of disaster.

7.10 1. Alternate means of communication should be developed so that vital information can be passed to the people involved in emergency actions.

8.1 1. Significant loss exposures that cannot at the moment be controlled through engineering or safeguarding measures should be addressed in the rules. To be practical, the rules should be kept to a minimum.

8.2 1. An inventory listing all the different types of occupations, trades, and crafts at the minesite should be made as the base of a survey of needs for craft rules.

8.4 1. A policy on safety and health rules discipline should be written as a guide to managers at all levels and to ensure consistent treatment of all employees, salaried and hourly.

8.5 1. A program should be developed to reinforce critical rules with instructional signs and markings.

9.2 1. Personal harm accident and incident analysis data should be tabulated and published for divisions within the organization, as well as for the organization as a whole.

9.4 1. Project teams should be used at Denison - Potacan Potash Company - Sussex, New Brunswick to research significant safety problems identified through accident/incident analysis, to develop effective remedial actions for these problems, and to audit the effectiveness of the remedial action.

9.5 1. Incidents not resulting in losses should be analyzed for loss potential and trends.

10.1 1. A job training needs inventory should be made, listing all tasks performed, as an aid to identifying employee training requirements. This can be the same inventory used in Elements 4, 8 and 12.

10.2 1. A comprehensive formal training program should be developed within the entire organization. This is necessary to ensure that employees acquire the knowledge and skill that the organization wants them to have in order to be productive and safe on the job.

11.2 1. Periodic analyses of the rate of use, as well as the type and nature of wear or damage, should be made to verify that proper equipment is used and to identify problems.

11.3 3. Employees who comply with protective equipment standards should have such performance recognized and commended.

11.4 1. Periodic measurements of compliance with protective equipment standards should be made, and the effectiveness of program management evaluated.

12.3 1. A program to communicate information on health hazard exposures and treatment should be developed.

12.4 1. Management should conduct ongoing programs of supervisory observation and professional monitoring of health exposures and compliance with control measures.

12.5 1. A procedure should be established for an occupational health review of processes at the design stage to assess potential health hazards in new or modified processes.

12.10 1. First aid treatment kits should be provided so they are readily available for emergency treatment. They should contain items appropriate to the exposures in the work area.

14.1 1. An organizational engineering policy or directive should be written requiring formal safety and health/loss control reviews at the conception and design stages of all new development, construction and modification projects. This policy or directive is to be signed by the general manager to emphasize commitment in the health and safety program.

15.1 1. A program should be developed to train supervisors, and other employees who give job instruction, in personal communications principles and techniques.

3. The personal communications program should instruct supervisors on, and have observed practice of, the techniques for:

16.1 4. All supervisors should be trained in safety talk techniques so they will give effective short presentations of safety and health information.

16.4 1. Audits of performance to standards for group meetings should be made at least once each three months, using sampling techniques.

17.1 1. Safety and health bulletin boards, with materials organized for attractive appearance and effective communication should be put up in work areas. Not all bulletin boards presently meet this criteria.

3. A standard should be developed to regulate the items that will be placed on safety and health bulletin boards.

17.4 1. Individual recognition and awards should be developed to give people added incentive to carry through the safety and health program activities.

17.6 1. A program should be developed to create incentives for group efforts in safety and health program activities.

18.1 1. A survey should be made of all jobs to determine the need for analysis on the basis of physical capacity. This includes manual lifting and carrying of materials, operation of mechanical controls, body positions and movement required to perform work tasks, maximum or minimum body size and reach, exposure to health hazards below normal thresholds, perception to sensory cues, reaction and coordination.

19.1 1. When designing your purchasing policy, ensure that all points are covered that are listed in this element. The policy should emphasize the control of loss exposures at the purchasing stage.

2. The purchasing control procedure should give details and instructions for:

20.1 1. A system should be set up through which supervisors can report employee absences that are due to off-the-job accidents.

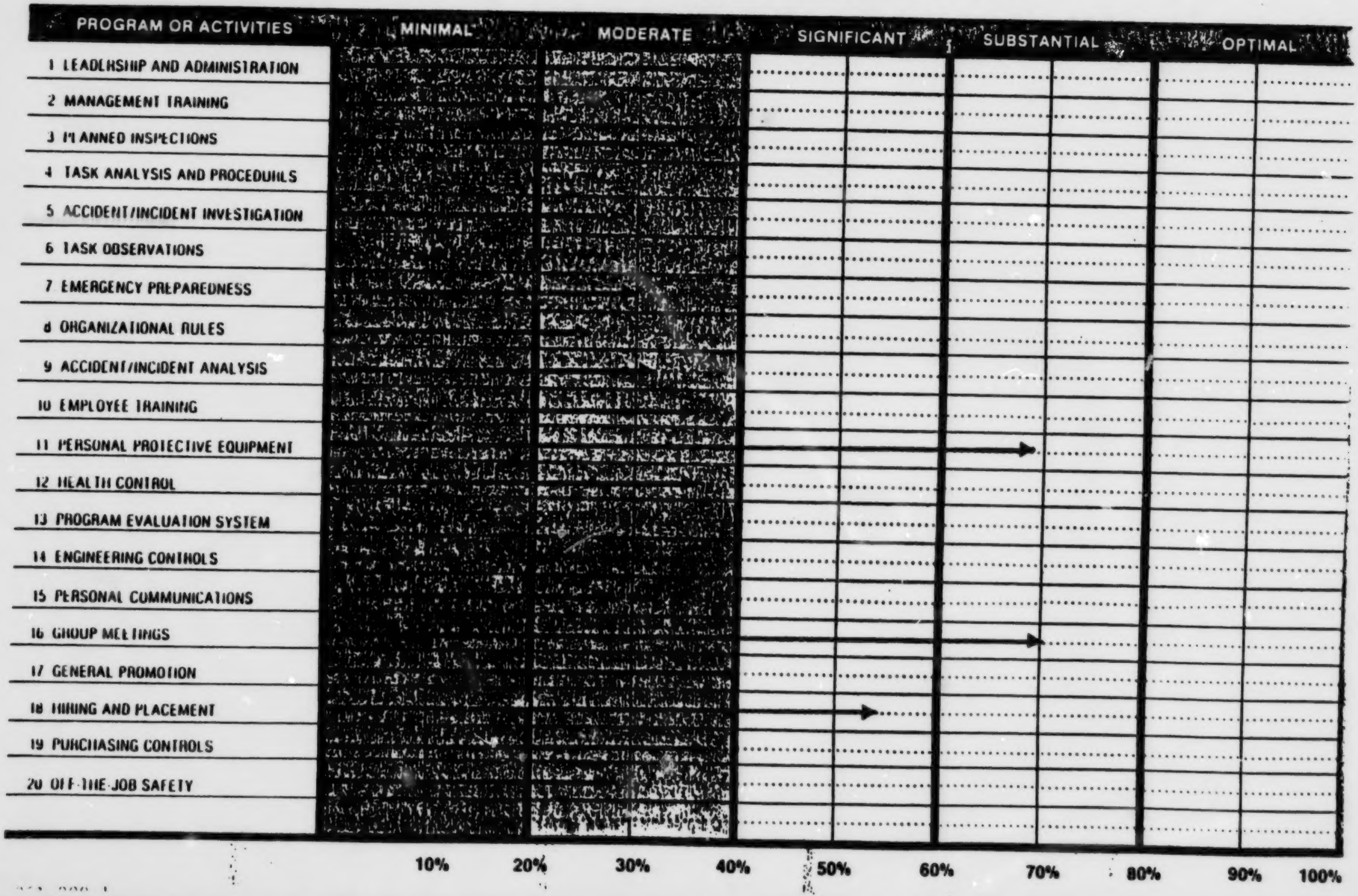
Graphic Profile Summary

GRAPHIC PROGRAM EVALUATION SUMMARY

M. D. Crucefix
CONSULTANT/S

September 12-15, 1989
EVALUATION DATES

COMPARISON TO PROGRAM STANDARDS OF LEADERS IN INDUSTRY



Summary
Score Sheet

INTERNATIONAL MINE SAFETY RATING

Audit of: Denison-Potacan Potash Company #247
NAME OF ORGANIZATION (NUMBER)
Sussex, New Brunswick
ADDRESS
Canada

Date of Audit: September 12-15, 1989

Audited by: M. D. Crucefix

Summary of Ratings

Element		Points Possible	Points Awarded	Percentage
1.	Leadership and Administration	1170	419.3	35.8
2.	Management Training	700	148	21.1
3.	Planned Inspections	760	266.6	35.1
4.	Task Analysis and Procedures	505	No Measurable Activity	
5.	Accident/Incident Investigation	680	193	28.4
6.	Task Observation	330	No Measurable Activity	
7.	Emergency Preparedness	770	229.4	29.8
8.	Organizational Rules	515	131	25.4
9.	Accident/Incident Analysis	455	147.5	32.4
10.	Employee Training	675	246	36.4
11.	Personal Protective Equipment	450	310	68.9
12.	Health Control	645	233	36.1
13.	Program Evaluation System	430	No Measurable Activity	
14.	Engineering Controls	510	65	12.7
15.	Personal Communications	450	125	27.8
16.	Group Meetings	400	280	70.0
17.	General Promotion	355	141	39.7
18.	Hiring and Placement	350	190	54.3
19.	Purchasing Controls	400	150	37.5
20.	Off-The-Job Safety	250	69	27.6
	Total Possible Points	10800	3343.8	31.0

Based on the International Safety Rating System's Conditions Guide for Inspections, or its equivalent, and as substantiated by audits and supporting records, what is the compliance with workplace standards within the organization? (See Physical Conditions Guide for Inspection Booklet.) 78.0

Comprehensive Evaluation Report

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada

Leadership and Administration

ORGANIZATION/LOCATION
35.8% - Moderate

PROGRAM AREA EVALUATED
September 12-15, 1989/M. D. Crucefix

EVALUATION LEVEL:

DATE / CONSULTANT :

EVALUATION FACTORS:		POSSIBLE POINTS	POINTS SCORED
1.1.	General Policy	70	62
1.2.	Program Coordinator	90	83
1.3.	Senior Management Participation	120	5
1.4.	Established Program Standards	120	0
1.5.	Management Participation	100	3.3
1.6.	Presentation at Management Meetings	60	60
1.7.	Management Reference Manual	85	46
1.8.	Management Audits Conducted	80	0
1.9.	Individual Responsibility for Safety and Health/Loss Control	110	85
1.10.	Establishment of Annual Safety and Health/Loss Control Objectives	75	0
1.11.	Joint Safety & Health Committees and/ or Safety & Health Representatives	50	20
1.12.	Refusal to Work on the Grounds of Safety & Health Hazards	35	15
1.13.	Reference Library	175	40
	TOTAL	1170	419.3

Element Definition

The involvement of the total management team at Denison - Potacan Potash Company - Sussex, New Brunswick from supervisor to the general manager in the safety and health program is essential to its success. Such involvement includes leadership in the development of the program and direction of program activities. The methods of demonstrating leadership in the safety and health program include: setting priorities, standards, program objectives and directives; ensuring that safety is a part of management appraisals; establishing high reporting relationships for safety advisory staff; conducting safety tours and inspections; participation in special safety program activities; including safety and health item reviews at regular management meetings; reviewing program audits and ensuring that proper stewardship to recommendations takes place; and attending safety meetings with all employees to ensure that their concerns are heard and addressed as well as to demonstrate personal commitment to a successful program.

Existing Noteworthy Efforts

1.1 1. The safety policy statement effectively communicates the general manager's commitment to the program for protection of people and property.

1.2 1. The safety and health staff is organized for good effect. One person is designated as the safety program coordinator.

2. The established reporting relationship allows the program coordinator to be an effective advisor to all managers in general, and to general managers in particular (when the superintendent of safety is in place).

3. The time and assistance given the coordinator allow adequate attention to safety staff functions.

1.3 1. Their written communications to managers and to employees stress safety as essential to personal welfare, efficiency, and productivity.

1.6 1. Regular meetings of managers include safety items on the discussion agenda. This enhances both prevention and reduction of losses due to accidents.

1.9 1. Safety responsibilities are clearly defined, in terms of performance, in individual manager's job descriptions. These complement the program standards.

1.11 1. Safety and Health Committees are functioning well. These provide interaction between management and hourly employees on safety and health problems where both have vital interests.

Suggestions For Continued Improvement

1.1 1. The existing safety policy should be expanded to include fire losses and compliance with legislation.

2. The policy statement should encompass all aspects of safety. This is to emphasize the commonality of basic causes among these different aspects, and unified efforts in combating these basic causes. It is also to avoid conflicts in program actions and avoid duplication of efforts.

3. The policy statement should get wide distribution so that it is truly effective. It should be included, quoted, or cited in all major activities related to the safety program.

4. It should be a preface to each program manual, operating instruction manual, employee handbook and safety rule booklet.

5. It should be included in all safety rule booklets.

6. It should be referenced in safety awareness campaigns and special safety and health program activities, as the basic authority for employee involvement in such activities.

The policy document provides the basis for the safety and health program. It can, and should, be a relatively simple statement. Yet, the very existence of a program rests on it. It serves as a constant reminder of the importance top management places on all aspects of loss control. It provides the foundation for individual manager's objectives. It is the basis for programming and budgeting the financial, personnel, and property resources needed for safety activities. Finally, it provides employee participation in program activities.

1.3

1. General managers' visibility needs to be increased to motivate other managers and employees' involvement in safety and health activities at Denison - Potacan Potash Company - Sussex, New Brunswick.

2. Periodic health and safety tours are suggested to provide on-site reviews of the effectiveness of accident control measures. These give line managers and employees access to the general manager on safety problems. They also give middle managers and safety staff the opportunity to present and discuss loss exposures or remedial actions at their site in the workplace.

3. Safety and health tours should be conducted monthly, and should cover all critical work areas at least once each six months.

4. Safety and health staff should prepare briefs on important items as aids to the effectiveness of executive tours. The briefs should identify high potential loss exposures, critical safety problems, significant remedial actions, and exemplary performance by employees or line supervisors.

The visibility of general managers is critical to program effectiveness. It shows employees as well as subordinate managers that they follow their own policy. There are certain functions that only general managers can perform. Focusing their actions on these functions makes the most efficient use of their time. The activities are periodic communications on specific safety problems, safety tours of employees' work areas with emphasis on critical loss exposures, and reviews of major program activities.

1.4

1. Standards for management performance should be written for all program elements at Denison - Potacan Potash Company. These standards should define the vital areas of management work, and set minimum performance requirements. Such benchmarks are essential to the effectiveness of any management system. A company of your size and activity should have the following elements in place:

Leadership and Administration
Management Training
Planned Inspections
Job/Task Analysis and Procedures
Accident/Incident Investigation
Job/Task Observation
Emergency Preparedness

Organizational Rules
Accident/Incident Analysis
Employee Training
Personal Protective Equipment
Health Control & Services
Engineering Controls
Personal Communications
Group Meetings
General Promotion
Hiring and Placement
Purchasing Controls

No program is effective without standards. They are the guideposts by which people manage their efforts and the efficient use of time, money, materials, and facilities.

1.5

1. The unique knowledge and abilities of each member of the management team at Denison - Potacan Potash Company should be used in special safety and health program activities. These activities should be outside the normal loss control responsibilities of managers.
2. Suggested special activities are service on safety problem study teams, safety and health committees, special theme safety awareness campaigns, and safety and health educational programs.
3. Special activities should use the talents of managers who have control of personnel and material resources in or affected by the particular problem or subject.
4. A special activity for each manager at least once every two years is suggested.

1.6

1. The present safety agenda items at management meetings should be expanded to include:
    1. High potential loss exposures identified through incidents, inspections, or observations.
    2. Status of remedial actions on critical items, or the applications of such remedial actions to other loss exposures.
    3. Significant findings on program audits.
    4. And, progress toward objectives in program development.

Communication on loss exposures, their evaluation, and their control, is essential in a safety program. The risk and the degree of control are affected by management's actions with respect to operations. Safety aspects are, consequently, a critical item for management meetings where operational decisions are made and feedback is given.

1.7

1. A complete safety management reference manual should be developed to provide guidance on the development and conduct of the program. A manual can provide authority, guidance, and standardization for management actions.

A program reference manual provides managers with detailed advice and example on their program activities. It helps them organize program work for greater effect. It promotes standardization of actions yet allows adaptation to the unique situations in every area. It reinforces management training and provides review of critical aspects of program management. It also provides amplified information to aid in decisions.

1.8 1. Each manager at or above department head level should participate in auditing and evaluating the safety and health program at least once each year.

2. The format of these audits can range from simple audits of subordinate managers' performance on managerial tasks to comprehensive team evaluations of the entire organization and program.

3. Managers participating in audits should be trained in essential auditing and evaluation techniques.

4. The training should include the methods of:

    1. Sampling to assure the validity of findings as representatives of performance throughout the organization.
    2. Personal interviewing for verification of program management records.
    3. And, the principles of statistics for proper statement of the levels of performance.

5. Forms should be developed to standardize the audit program and reports of findings on audits.

6. The following elements should be added to the annual audit program at this time:

    Leadership and Administration
    Management Training
    Planned Inspections
    Job/Task Analysis and Procedures
    Accident/Incident Investigation
    Job/Task Observation
    Emergency Preparedness
    Organizational Rules
    Accident/Incident Analysis
    Employee Training
    Personal Protective Equipment
    Health Control and Services
    Engineering Controls
    Personal Communications
    Group Meetings
    General Promotion
    Hiring and Placement
    Purchasing Controls

Auditing the program of a management peer is common to the more successful programs throughout the world. It gives the manager a double benefit. The first benefit comes through use of the audit system which refreshes the manager's knowledge of the program. Second is the opportunity to observe other methods that could be used in the manager's own program.

1.9 1. The responsibilities in managers' individual job descriptions should include those required by legislation.

2. A manager's written procedure for handling and following through on employees' reports of safety and health hazards should be developed to reinforce employees' actions with respect to this responsibility.

1.10 1. Objectives for the expansion and refinement of the safety program should be set each year.

2. These objectives should be based on a long range plan for development of the safety program.

3. The objectives should provide guidelines for allocating personnel, time, and materials resources to safety and health activities.

4. Appropriate line managers, staff, and executives should be involved in the preparation of the annual objectives. This includes those with budget responsibility and control of the resources to be committed.

5. Safety program performance objectives should be developed within each organizational unit.

6. The programming of activities necessary to meet annual objectives should be defined within each unit and communicated to all managers within that unit so that they can integrate these activities into their schedules.

1.11 1. The safety and health committee's responsibilities and lines of communication should be well defined in an internal company charter or other written authority.

2. The lines of communication should define the procedure for recommendations to management from the safety and health committee.

3. The lines of communication should specify feedback to the committee and follow up on recommendations.

4. The lines of communication should specify notices of information related to personal safety and health to employees, and for employee requests for items of information.

1.12 1. The refusal to work procedure should be discussed in depth in each individual manager's program orientation.

2. Updates in the procedure should be management meeting agenda items.

1.13 1. A central reference library should be set up for the safety and health program.

2. It should be available to all members of management, to safety project team members, to safety and health committee members, to appropriate employees or employee representatives, and to the safety staff.

3. The reference library should be expanded to include:

    1. Relevant safety legislation and consensus standards.
    2. Safety management and engineering reference texts appropriate to program and industry activities.
    3. Periodicals to update standards and reference text information.
    4. Copies of reports of significant safety research relative to organization activities.
    5. More catalogs of pertinent program supplies, educational materials, and program promotional materials.
    6. And, more catalogs of appropriate safety and health equipment and devices.

4. Copies of significant articles from periodicals should be reproduced and sent to managers as appropriate to update their knowledge of developments in the safety field that relate to their responsibilities.

5. The library should be audited on the adequacy and currency of the documents it contains.

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada

ORGANIZATION/LOCATION

Management Training

PROGRAM AREA EVALUATED

21.1% - Moderate

EVALUATION LEVEL:

September 12-15, 1989/M. D. Crucefix

DATE / CONSULTANT:

EVALUATION FACTORS:		POSSIBLE POINTS	POINTS SCORED
2.1.	Senior Management Orientation	105	100
2.2.	Formal Initial Training of Senior Management Personnel	135	0
2.3.	Formal Review Training of Senior Management Personnel	75	0
2.4.	Formal Initial Training of Supervisory Personnel up through Middle Management	150	48
2.5.	Formal Review Training of Supervisory Personnel up through Middle Management	95	0
2.6.	Formal Training of Program Coordinator	140	0
	TOTAL	700	148

Element Definition

Effective loss control management requires a high degree of learning and skill. For the experienced manager this learning involves the application of fundamental management principles to the recognition, evaluation, and control of all loss exposures. For the less experienced manager, it requires reinforcing and expanding their knowledge of basic management techniques and integrating safety management practices into those techniques. Loss management training should provide the knowledge each manager needs to be effective at managing their own areas' loss management program.

Existing Noteworthy Efforts

2. Management training programs at Denison - Potacan Potash Company - Sussex, New Brunswick are in early stages of development, therefore only a few commendations are appropriate at this time.

2.1 1. General managers at Denison - Potacan Potash Company - Sussex, New Brunswick receive an orientation on key elements of the present safety program and their related personal responsibilities.

2. The orientation defines the scope of program activities and possible methods of managerial involvement.

Suggestions For Continued Improvement

2.2 1. All general managers at Denison - Potacan Potash Company - Sussex, New Brunswick should be given a formal training course in safety and health management as part of their personal development.

2. This course should include an overview of all major elements of the safety and health program.

3. The activities of middle manager subordinates should be pointed out to enhance supervision of their safety activities.

4. The formal training course for general managers should have a written lesson plan. This is to ensure that critical topics are included.

5. The lesson plan should give major topics and state the desired learning outcome for each.

6. The course schedule should give the approximate time to be devoted to each topic to ensure that critical items are discussed in sufficient detail.

7. Administrative systems should be developed to identify general managers and potential general managers eligible for the course.

8. Individual and composite records of course scheduling and completion should be kept.

9. Written course materials should be developed to enhance the course for general managers.

10. The materials should be compatible with organization programs and directives.

11. Materials provided to general managers should include items that can be used directly in their activities, such as checklists and performance evaluation guides, or will provide ready reference in their management work.

12. The following elements should be included in an initial formal course for general managers:

- Leadership and Administration
- Management Training
- Planned Inspections
- Job/Task Analysis and Procedures
- Accident/Incident Investigation
- Job/Task Observation
- Emergency Preparedness
- Organizational Rules
- Accident/Incident Analysis
- Employee Training
- Personal Protective Equipment
- Health Control and Services
- Engineering Controls
- Personal Communications
- Group Meetings
- General Promotion
- Hiring and Placement
- Purchasing Controls

Effective program management depends on a thorough education in successful concepts and methods. Knowledge enables a planned, progressive program. Without training, the consequence is a reactive program characterized by too much being done too late. That is wasteful and never allows the organization to attain effective prevention. Training programs should be tailored to the varying responsibilities of the levels of management. This educates the managers how to do their part and how to interface with their peers, subordinates and superiors for an efficient program that has neither gaps nor overlays.

2.3. After initial formal training programs for general managers have been set up, review training courses should be established to refresh and update managers' knowledge on critical activities in the safety and health program. Lesson plans, course materials, and personnel records should also be developed for this review training. Concentrate on this only after the full and complete program of initial training for general managers is in place.

2.4 1. Formal training courses in safety and health fundamentals should be given each middle manager and line supervisor as part of their personal development.

2. Separate course sessions for managers at each level would be advisable since their functions and responsibilities differ significantly in the organization's safety program.

3. The initial course should include an overview of the major elements of the safety and health program.

4. The course should detail techniques that these managers can use to implement the safety program in their areas of responsibility.

5. The formal training course for middle to superintendents should be guided by a written lesson plan. This is to ensure that critical topics are covered.

6. The lesson plan should give the major topics, the desired learning outcome for each, and the key points to be covered.

7. Administrative systems should be developed to identify middle managers and line supervisors who are to receive training for each level.

8. The system should prompt their scheduling for course sessions, and record their completion of training.

9. Written course materials should be developed to enhance the safety and health training for middle managers and supervisory personnel.

10. These materials should aid the understanding and use of the information presented in the course.

11. They should include items that can be used directly in the managers' activities, or provide ready reference as an aid to managers' performance.

12. The following program elements should be included in an initial formal course developed for middle managers and line supervisors:

Leadership and Administration
Management Training
Planned Inspections
Job/Task Analysis and Procedures
Accident/Incident Investigation
Job/Task Observation
Emergency Preparedness
Organizational Rules
Accident/Incident Analysis
Employee Training
Personal Protective Equipment
Health Control and Services
Engineering Controls
Personal Communications
Group Meetings
General Promotion
Hiring and Placement
Purchasing Controls

2.5. After initial formal training courses for middle managers and supervisors have been set up, review training courses should be set up to refresh and update managers' knowledge of safety and health. Review training should cover each major topic at least once every three years. Lesson plans, course materials, and personnel records should also be developed for this review training. Concentrate on this only after the full and complete program of initial training for middle managers and supervisors is in place.

2.6 1. If the present program coordinator remains for any length of time he should attend a course in fundamentals of occupational safety and health.

2. This course should be at a recognized safety training agency.

3. The course agenda should be pertinent to the organization's loss exposures and at a level compatible with program objectives.

4. The program coordinator should participate in programs to update knowledge of safety and health practices. Suggested update training activities are:

    1. Professional societies - Accredited Safety Auditor, Canadian Registered Safety Professional, and Canadian Society of Safety Engineering.
    2. Safety congresses and conferences like the NSC Congress.
    3. And, safety and health seminars.

Processes, facilities, activities and technology change constantly. The application and effectiveness of safety and health controls also change. Consequently, safety staff need to expand and update their professional knowledge if the safety program is to be kept up or improved.

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada

ORGANIZATION/LOCATION

Planned Inspections

PROGRAM AREA EVALUATED

35.1% - Moderate

EVALUATION LEVEL:

September 12-15, 1989/M. D. Crucefix

DATE / CONSULTANT :

EVALUATION FACTORS:		POSSIBLE POINTS	POINTS SCORED
3.1.	Planned General Inspections	140	101.6
3.2.	Follow-Up Procedures	140	0
3.3.	Inspection Report Analysis	50	0
3.4.	Critical Parts/Items	100	0
3.5.	Preventive Maintenance	85	55
3.6.	Mobile and Materials Handling Pre-Use Equipment Inspections	65	55
3.7.	Alternative Conditions Reporting	50	35
3.8.	Planned General Inspection Report Maintenance	55	20
3.9.	Regular Program Monitoring	75	0
	TOTAL	760	266.6

Element Definition

Planned general safety inspections involve the systematic examinations of the facilities, equipment, tools, and materials employees are exposed to and are working with. Planned inspections are basic to safety and health programs in that they assist in identifying the problems which directly lead to accidents. They can be of even greater value if they are used as an indicator of the effectiveness of such things as safety engineering, safety methods, purchasing controls, communications, and in general the overall program at Denison - Potacan Potash Company - Sussex, New Brunswick.

Existing Noteworthy Efforts

3.2 1. General inspections are conducted on a regular and frequent basis at Denison - Potacan Potash Company - Sussex, New Brunswick.

2. Each area supervisor has copies of inspection reports which pertain to findings within his or her area of responsibility.

3.3 1. Safety committees review significant inspection findings and actions. This uses the committee members' knowledge, and experience, and functions to good advantage in accident prevention.

3.6 1. Records on the maintenance schedule and scope of work done are kept to aid considerations of changes in the preventive maintenance program to improve cost effectiveness.

3.7 1. Pre-use inspections are performed on all appropriate equipment as a control of safety in the operation of such equipment.

Suggestions For Continued Improvement

3.1 1. To ensure that the present planned general inspections are to be continued with quality, all inspected areas have to have a checklist developed. All levels of management, the three safety supervisors, and the safety committee all make inspections. There does not, at present, seem to be a logical order of who does what. This is probably, as indicated in Element #1, because no standards exist for this company To ensure that the time of the individual is used effectively a detailed assessment should take place to design a better planned general inspection process.

3.2 1. The general inspection program at Denison - Potacan Potash Company - Sussex, New Brunswick should include supervisors' self-inspections of work areas, management team inspections of critical areas, plus safety staff inspections as a control measure.

2. The inspection program should be organized for best effectiveness.

3. Inspection responsibility should be assigned, by job title, for each area and facility at the minesite.

4. The nature of work in each area should be assessed and the optimum frequency for inspection set as a standard for each area. This standard can vary from weekly to annually, depending on the situation.

5. Schedules for inspections should be made and performance of the inspections verified.

6. An inspection checklist should be developed for each area to ensure that significant loss exposures are examined.

7. A system should be established so that checklists are updated whenever new equipment is installed, when facilities are modified, or when processes are changed.

8. All substandard practices and conditions detected on each inspection should be described in a written report.

9. Each substandard practice or condition should be classified as to its loss potential as an aid to setting priorities for remedial actions.

Organization is the key to a successful planned inspection program. If general inspections are to be conducted regularly and are to be comprehensive in scope and performance, they must be well planned. The areas to be inspected must be analyzed for potential exposures, the frequency of inspection determined to reach an optimum control for effort expended, responsibilities for completion of the inspections must be set, and then checklists of items to be inspected must be developed. All these must be updated as situations change. Then findings must be reported to someone with authority to approve corrections, assign responsibilities for the necessary actions, and allocate resources needed to complete the work.

3.3 1. An inspection follow-up system should be developed to ensure that remedial actions are completed, provide adequate control of the risk, and have no undesired side effects.

2. The system should prompt actions on a priority determined by the potential for accidental losses.

3. The respective managers, the safety staff, and safety representatives should be advised of significant events and findings involving remedial actions. Such communications should be prompt, as appropriate to the hazard classification.

Inspections often generate repeated "laundry lists" unless managers take measures to ensure that all the remedial actions are taken, that they have the effect expected, that the remedial measures truly control the basic causes, and that they are continued in use. Managerial reviews of inspections should concentrate on the follow-up for reported items with a possibility of similar deficiencies in other parts of the organization and the follow-up should include lateral applications of the remedial measures.

3.4 1. A periodic analysis of inspection findings should be made to identify trends and common basic causes of the major deficiencies observed.

2. The analysis should be prepared in a way to focus managers' attention on the major types of inadequacies within the personal and job factors of basic causes.

3. The analyses should be presented and distributed so they will help managers identify and correct any inadequacies in the safety program, standards, or compliance.

3.5 1. A critical parts inspection program should be set up at Denison - Potacan Potash Company - Sussex, New Brunswick. This is one of the more important phases of inspection. It provides systematic examination of the parts of equipment or items in facilities that are most likely to create a serious safety problem. Your present system is mostly a spare parts program as denoted in memo dated 21 March 1988 from Jack Durant to Roy Tucker and Ivan Benetti. The subject of the memo is critical and insurance spares.

2. The inspections should be based on a critical parts inventory. This inventory should list all items having a serious loss potential, and the parts or components liable to cause the problem.

3. The programming should include parts which need periodic cleaning, servicing, adjustment, or replacement to avoid their malfunctioning and a serious accident.

4. An inspection schedule should be set for each critical part. The schedule should define frequency and responsibility as appropriate to each part.

5. Supervisors should monitor the performance of critical part inspections on items within their areas of responsibility to ensure that inspections are made to schedule.

Critical items are those whose malfunction or failure to operate properly could cause a serious accident. Critical parts are those parts of the critical item most likely to be factors in an incident. Critical parts inspections are the most vital type of inspections because they aid control of the serious loss exposures. Essential to a critical parts inspection program is identifying the critical parts, determining what is to be inspected and how often, deciding who is qualified to detect the deficiency, inspecting, keeping inspection records, and supervising the program.

3.6 1. The preventive maintenance program should identify when there have been abnormal wear, abuse, and other forms of accidental damage.

3.7 1. Supervisors should audit the performance of pre-use inspections and of proper actions on discrepancies. The results of such audits should be discussed among management as appropriate to update other elements of the program.

3.8 1. Supervisors should follow-up on items reported by employees, get prompt action, and give the employees feedback on actions being taken or planned.

2. The safety staff should receive information on employees' reports when the conditions have a serious loss potential.

3.9 1. The entire inspection program should be audited on a sampling basis, quarterly as one of the key indicators of managers' performance in safety activities.

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada

Task Analysis and Procedures

ORGANIZATION/LOCATION

PROGRAM AREA EVALUATED

No Measurable Activity

EVALUATION LEVEL:

September 12-15, 1989/M. D. Crucefix

DATE / CONSULTANT :

EVALUATION FACTORS:		POSSIBLE POINTS	POINTS SCORED
4.1.	Management Directive	50	0
4.2.	Critical Task Inventory	105	0
4.3.	Task Analysis and Task Procedures System	65	0
4.4.	Task Analyses and Procedures on Critical Tasks	120	0
4.5.	Safety and Health Hazards in Task Analyses and Procedures	95	0
4.6.	Regular Program Monitoring	70	0
	TOTAL	505	0

Element Definition

Task procedures and practices are disciplined ways to complete critical work properly. The procedures state specific actions that must be done, usually in a step by step manner, for the task to be right—and safe. Task practices state general methods or guidelines to follow when performing a task which is not required to be done identically each time it is performed.

Task analysis is the system for developing the procedure or practice. It involves observing the task being done, writing down the steps to be followed, identifying potential problems which could arise at each step and establishing controls for each potential problem. This element evaluates the formal program that exist at Denison - Potacan Potash Company - Sussex, New Brunswick to accomplish three major activities: 1. the systematic identification of all critical tasks throughout the minesite; 2. the formal analysis of those critical tasks; and 3. the writing of procedures and practices based on the information gathered from the analysis.

Existing Noteworthy Efforts

4. Because of no measurable activity in this element, no commendations are appropriate at this time. Because this element examines the systematic examination of the task to identify all loss exposures present while the task is being done, it should be considered at a later date in program development. This aspect of the system can take years to complete. It is fair for me to state that unless you were totally familiar with the ISRS prior to this audit you would have difficulty meeting the total requirements. However, I would like to impress upon you that this element is very important for the reduction of accidents/incidents in your organization because it concentrates on the pre-loss stage of programming.

Suggestions For Continued Improvement

4.1

1. A directive from senior management should be published to give emphasis on the importance of job analysis and job procedures. This document should communicate the importance of this program element and state the executive's desire to have it managed effectively.

2. The directive should state the requirements for job analyses, the key methods to be used, the format for worksheets and records, the use of analyses in writing job procedures and safe work practices, and the value of analyses for job instruction, employee education, job observation, emergency preparedness, incident investigation, and other program activities.

Job observation is important for effective accident control because it gives feedback on several program activities. But, people are sensitive to being watched. That makes supervisors reluctant to make comprehensive job observations. A directive from a key executive officer is vital to communicate the purpose of job observation. That purpose is to evaluate the quality of employee placement and training, the adequacy of tools and equipment provided, and of work methods and procedures being used.

4.2

1. A critical job/task inventory should be made as the base of an effective job analysis and procedures program.

2. The inventory should list all occupations within the organization as well as breakdowns of the tasks performed.

3. Critical tasks should be identified by review of the loss exposures and past incidents to help set priority for analysis and individual objectives of each supervisor.

If the most critical work is to be observed and evaluated, the jobs with the serious loss potentials must be identified. These can only be identified with certainty when all tasks performed are known to management. The critical task inventory is the medium for positive identification of jobs with significant risk.

4.3

1. After an inventory has been made, objectives should be set to prompt regular work on analyses and insure that the analyses and procedures are comprehensive and thorough.

2. Such objectives should be set for the organization, for each department, and for each area so that every manager has a vested interest in the program.

4.4 1. Administrative guidelines should be developed to make full use of the potential benefits of job analysis.

2. The system should track completion of analyses and procedures to monitor progress toward objectives.

3. Facility and process change procedures should include preliminary and final analyses, and update of procedures and practices, as an integral part of the modification proposal.

4.5 1. The format for job analysis worksheets should include the listing of each safety and health hazard encountered in performing the task, and the control measure to remove or reduce the risk of each hazard.

2. Controls which require an employee's action should be written in to job procedures or into safe work practices, as appropriate.

3. The job analysis worksheets and procedures should be used in employee training programs to ensure that employees know how to control the hazards of the job.

4. The master task analysis worksheets should be kept in active files and reviewed periodically to see if the effectiveness of control measures can be upgraded through new technology or procedures.

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada

ORGANIZATION/LOCATION

Accident/Incident Investigation

PROGRAM AREA EVALUATED

28.4% - Moderate

EVALUATION LEVEL:

September 12-15, 1989/M. D. Crucefix

DATE / CONSULTANT :

EVALUATION FACTORS:		POSSIBLE POINTS	POINTS SCORED
5.1.	Accident/Incident Investigation Procedure	120	93
5.2.	Scope of Accident/Incident Investigation	80	35
5.3.	Remedial Action and Follow-up	120	0
5.4.	Major Accidents	50	0
5.5.	High Potential Incidents (Near-misses)	40	0
5.6.	Operating Management Participation	85	20
5.7.	Incident (Near-miss) Reporting & Investigation	70	0
5.8.	Accident/Incident Report Maintenance	55	45
5.9.	Regular Program Monitoring	60	0
	TOTAL	680	193

Element Definition

The accident/incident investigation element measures work being done at Denison - Potacan Potash Company - Sussex, New Brunswick to methodically examine an undesired event that resulted, or could have resulted, in physical harm to people or damage to property, as well as the system that exists to implement appropriate corrective actions resulting from investigations. Investigation activities should be directed toward defining the facts and circumstances of the event, their causes, and appropriate remedial actions to control the causes.

Existing Noteworthy Efforts

5.1 1. A good investigation procedure has been developed at Denison - Potacan Potash Company - Sussex, New Brunswick. It provides a system of prompt notification, response, analysis, and reporting.

2. A standard form is used to report findings on investigations and to recommend remedial actions.

3. The report form is well designed. It guides the investigator's collection of information and analysis of basic causes.

Suggestions For Continued Improvement

5.1 1. Managers should be trained in accident cause analysis and in appropriate investigation methods for industrial and mining accidents/incidents.

2. Appropriate investigation tools, equipment, and materials should be obtained or developed and made available for use in investigations.

Investigations must be methodical and thorough if they are to justify the time used and to be of value in the safety program. Organizations with effective safety programs have several actions that are common in their programs. They have a system to get prompt response to accidents so there is minimal loss of evidence. They have investigation by managers. The depth of examination depends on potential for future losses. Managers are well trained in investigation techniques and cause analysis. The program concentrates on basic causes and remedial actions. They have a simple, well-designed investigation report form. For consistent, high quality investigations, all these aspects need to be detailed in a written procedure.

5.2 1. The scope of the investigation procedure should be expanded to have prompt response to, full investigation of, and a detailed report on the following types of incidents (Presently the following two are left out and it is not clear enough at this time):

1. Non-disabling injuries and occupational illnesses with higher loss potential.
2. Disabling injuries and occupational illnesses.

2. Periodic checks of various possible sources of information should be made to verify that incidents are being reported in compliance with program standards. These sources include:

   1. First aid stations.
   2. Fire control centers.
   3. Maintenance and repair centers.
   4. Salvage centers.
   5. And, claims processing offices.

5.3 1. A procedure should be written to guide actions to control accident causes.

2. The procedure should prompt selection of the best practical measures to eliminate the exposure, reduce the severity and/or frequency of losses, limit the extent of loss from the incident, or any combination of these.

3. An administrative system should ensure that remedial actions are completed.

4. Convenient records should show up-to-date information on which actions have been completed, which have been started, and which require personnel, materials, or financial resources.

5. Higher level managers should make monthly reviews of remedial actions on incidents with high loss potential.

6. The reviews should point out where a higher manager's authority is needed to get critical actions completed.

7. Significant events in remedial actions should be noted in records or put into other written forms. These include approval of recommendations, actions initiated, managerial reviews, discussions at management meetings, completion of actions, progress reports, verifications, and communications to employees.

Unless something is done to prevent recurrence of the accident, the investigation is a fruitless effort. Remedial actions include those to avoid the loss exposure, to reduce the severity or frequency of recurrence, and to limit the extent of loss if the incident occurs. Three additional essentials of remedial actions are to make certain that planned actions are completed, that there are no unexpected adverse effects, and that the actions continue to be used.

5.4 1. After any major accident at Denison - Potacan Potash Company - Sussex, New Brunswick, a written announcement of known facts and circumstances should be distributed to department heads. This is to enhance both their communications with employees and their assessment of possible like exposures within their own departments.

2. The written announcement should confirm, clarify, and amplify early verbal communications to these managers.

3. It should be sent out within 24 hours of the accident so critical information is used promptly.

A cardinal principle of an effective safety program is to avoid having accidents repeated. To do that requires good communication on incident circumstances, causes, and remedial actions. Managers who supervise investigation activities and who review reports, as well as managers of other areas, must ask where else the incident could occur. Then they must make certain that the managers and employees have the means and know how to prevent the incident.

5.6

1. A procedure should be written to provide for notification of department heads and general managers, and to define their participation in certain accident investigations. The authority of general managers and their access to resources is very helpful in some situations.

2. A general manager should direct the emergency response to and investigation of any fatality, major injury or illness, major fire, major property damage, major chemical spill, or incident with major loss potential.

3. A standard should be developed to provide an accident review meeting following the initial investigation of major accidents, and others with major loss potential.

The review meeting is the formal close-out of the active investigation. Its purpose is to make certain that the investigation has been pursued as far as it should be, considering the potential severity and frequency of recurrence. The review is the opportunity for general managers to question themselves as to why the risk was not identified, why the evaluation of the exposure was inaccurate, and why the control measures were inadequate. In the process, the adequacy of the entire investigation program is questioned and verified.

5.7

1. A program of comprehensive reporting, investigation, and remedial actions on near-accidents should be developed at Denison - Potacan Potash Company - Sussex, New Brunswick. Standards should define significant incidents to receive full cause analysis as the basis for accident prevention.

2. Pertinent incidents and control actions should be regular items of discussion at management meetings.

5.8

1. An audit of performance to investigation program standards and evaluation of program effectiveness should be made at least every six months.

2. The quality of investigation reports should be measured and these assessments used to control the training of supervisors and managers in investigation methods, and to apportion the time to be devoted to investigations.

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada

ORGANIZATION/LOCATION

Job/Task Observation

PROGRAM AREA EVALUATED

No Measurable Activity

EVALUATION LEVEL:

September 12-15, 1989/M. D. Crucefix

DATE / CONSULTANT :

	EVALUATION FACTORS:	POSSIBLE POINTS	POINTS SCORED
6.1.	Management Directive	25	0
6.2.	Complete Task Observation Objectives	130	0
6.3.	The Level Of Complete Task Observations	65	0
6.4.	Partial/Spot Task Observation Objectives	45	0
6.5.	Task Observation Report Analysis	25	0
6.6.	Regular Report Monitoring	40	0
	TOTAL	330	0

Element Definition

A planned task observation program is a tool to help superintendents at Denison - Potacan Potash Company - Sussex, New Brunswick be aware of current practices and problems. Task observation is a technique to ensure that critical tasks are performed efficiently and to Denison - Potacan Potash Company - Sussex, New Brunswick standards. While doing an observation, the superintendent validates employee training, task procedures, adequacy of equipment, and use of correct materials. An observation which reveals proper performance gives an opportunity for behavior reinforcement. An observation of substandard performance identifies training, motivation, equipment, materials or maintenance problems so actions can be taken to control risks. An observation of supervisor performance can also identify potential improvements in procedures or practices which could be used by others.

Existing Noteworthy Efforts

6. Because of no measurable activity in this element, no commendations are appropriate at this time. Systematic performance observation, whether it be planned, formal or informal is tied directly to Element 4. If Element 4 is not complete, one cannot be expected to use Element 6 at this time. However, you would start the process off by some management involvement.

Suggestions For Continued Improvement

6.1 1. A directive should be written and signed by the general manager at Denison - Potacan Potash Company - Sussex, New Brunswick, to set policy and standards for job observations. The directive should:

    1. Allocate the time for supervisors to make thorough job observations.
    2. Authorize training of supervisors in job observation techniques.
    3. Establish a system to follow through with remedial actions on the loss potentials identified by observations.
    4. Prevent employee uneasiness of being observed by emphasizing that the focus is on training, instructions, procedures, materials, equipment and facilities.
    5. Emphasize that supervisors are to identify causes of incorrect behavior, not find fault with people.
    6. And, stress that job observation makes supervisors more perceptive and sensitive managers of most people.

Policies and directives do not truly exist unless they are in writing. The more critical an activity is the more essential that its guidelines be written. Job observation is critical because of the specialized training needed, the time to be budgeted, the possible adverse effects on employee relations if done incorrectly, and most important, the potential for benefits through personal behavior reinforcement and the validation of employee development and safety engineering efforts.

6.2 1. Realistic objectives should be set for each supervisor to make complete observations of critical tasks. The objectives should ensure that an observation is made of every critical task that has a set procedure or practice.

2. Multiple observations should be made where there is high loss potential or the degree of risk is uncertain.

3. The frequency of observations should vary with the number of critical tasks in a supervisor's area of responsibility, the degree of risk of the task, the turnover of employees doing the task, and the changes in equipment or materials.

Goals are essential to success. Objectives motivate supervisors to give priority to the performance of their job observations. This is most important in the initial phase of a job observation program before the benefits become self-evident.

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada

Emergency Preparedness

ORGANIZATION/LOCATION

PROGRAM AREA EVALUATED

29.8% - Moderate

September 12-15, 1989/M. D. Crucefix

EVALUATION LEVEL:

DATE / CONSULTANT :

EVALUATION FACTORS:		**POSSIBLE POINTS**	**POINTS SCORED**
7.1.	Leadership and Administration	70	0
7.2.	Emergency Plan	145	14
7.3.	Supervisory Training in First Aid	30	12.4
7.4.	Employee Training in First Aid	35	35
7.5.	Emergency Lighting and Power	40	20
7.6.	Source of Energy Controls	40	5
7.7.	Protection and Rescue Equipment	85	45
7.8.	Emergency Team	90	43
7.9.	Qualified First Aid Attendants	35	30
7.10.	Organized Outside Help & Mutual Aid	40	20
7.11.	Protection of Vital Records	40	0
7.12.	Post-Event Planning	40	0
7.13.	Emergency Communication	45	0
7.14.	Communications to the Public	35	5
	TOTAL	770	229.4

Element Definition

The emergency preparedness element evaluates the formal programs in place at the minesite to prevent secondary accidents and prevent additional harm to people and damage to property once an emergency has occurred. The activities within this element include planning for emergency response, evacuation of people, systematic shutdown of facilities, continuation of vital operations, identification of emergency equipment needs, the identification and protection of vital records, establishing of proper relationships with organizations and agencies which can provide assistance in the event of an emergency, and the program to ensure a quick and safe restoration of operations.

Existing Noteworthy Efforts

7. This element has to be considered in its early stage of development. Therefore only a few commendations can be referenced at this time.

7.6

1. Emergency teams in the mine have been organized to perform the tasks given in the emergency plan for the mine only.
2. Mine team members have been trained in all aspects of their functions and certified to perform emergency team duties.
3. Mine teams are drilled on their emergency tasks on a regular schedule. Participation in drills is required to keep their certification.

7.7

1. Mutual aid plans include contingencies when outside aid would be reduced or delayed by large-scale disasters.

Suggestions For Continued Improvement

7.1

1. A member of upper management at Denison - Potacan Potash Company - Sussex, New Brunswick should be appointed to coordinate the development of an emergency plan, secure the resources that would be needed to execute the plan, and administer the emergency preparedness program.
2. Due to the authority needed, this appointment should be in writing.
3. Coordinators should be appointed within each department or section to give input into the plan and to administer the development of procedures, training of employees, conduct of drills, and other activities within the work center.

The coordination of the planning, programming, and execution of emergency preparedness activities is critical. The potential for losses is very large and the sources of emergencies are numerous and diverse. Fires, explosions, structural failures, and similar emergencies can easily be catastrophic. Various incidents from a simple spill to a political demonstration can initiate the emergency. The things to be done, the people needed, and the equipment or materials to combat the emergency vary greatly, even within one plant or building. Efficient and economical planning requires the direction of managers who have wide knowledge of activities, and who are able to obtain resources quickly and use them effectively.

7.2

1. A comprehensive emergency plan for the minesite should be written and distributed to all departments or sections.
2. The conceivable sources of emergencies should be defined and their probability of occurrence appraised as guidance for supplementary procedures.

3. Resources of people, equipment, materials, and facilities should be identified. The authority and procedures for use of these resources should be outlined.

4. The emergency plan for the minesite should have guidelines for several critical actions by work centers. These include:

   1. Evacuation of people to predetermined points of safety, and the accounting for people in the facility.
   2. The systematic shutdown of operations so that losses are minimized and so additional hazards are not created.
   3. The control of hazardous materials to prevent toxic effects on people, contamination of the environment, or destruction of facilities.
   4. The removal or protection of vital equipment or materials; that with high value or which is difficult to replace.
   5. The designation of a central control area as a point to which information is sent and from which control activities are directed.
   6. A search and rescue plan to locate and save people not accounted for in the egress.
   7. And, a procedure to establish when the emergency is under control, or is terminated, and facilities are safe to re-enter.

5. The emergency plan should be implemented through clear, concise written instructions for each work center - building, department or area. The procedures should specify exact actions to take, sources of decisions, controls to operate, and equipment to use.

6. An instruction should be written for each type of emergency that requires different actions from people or use of different equipment.

7. The plan should specify records required to document training, drills, critiques, emergency tests, and other associated activities.

The master emergency plan is a vital document. It prompts continuity in the efforts to control emergencies. Through consideration in depth of possible situations and conditions, the plan gives those who must direct activities the information on which to make the decisions most likely to be effective. The emergency plan, with implementing instructions and procedures, frees managers from the routine control of the situations covered by the plan.

7.3 1. Lighting and power should be provided where needed for safe egress like the main office building, for safe shutdown, or for continued operation during an emergency situation.

2. Emergency lighting and power systems should be tested periodically and a record made of such testing.

3. Testing should be scheduled according to equipment manufacturer's recommendations, to history of reliability, and to legislated standards where applicable.

Often power sources will fail during natural disasters, or power systems may be shut down or diverted by authorities as a means to control the emergency. Lighting is needed for safe occupancy or egress in all areas not illuminated by natural lighting. Electrical, mechanical, pneumatic, or hydraulic power is needed to operate emergency control systems or to effect a safe sequence of shutdown and such requirements should be defined in emergency plans. Emergency power systems are also needed for those activities which must continue as part of the emergency plan or as a loss control measure.

7.4

1. A program should be developed to identify, test and maintain master controls and emergency controls in order to ensure reliability and accuracy in shutting down or rerouting systems as part of emergency actions.

2. All master and emergency controls, and critical or hazardous systems should be marked with standard color-coding to enable people to locate these units quickly and correctly during an emergency, and to improve safety of their use during normal operations.

3. All master valves, switches, and controls should be labeled for positive identification to preclude use of the wrong control or failure to shut down a system in an emergency. The label should show direction of movement and control positions.

4. Objectives for color coding and labeling should be set so that these are completed according to priority and on a controlled schedule.

5. When controls and systems have been identified, the people who will operate these as part of their emergency actions should be made familiar with the locations of the units.

6. Emergency controls, switches and valves, as well as critical systems should be recorded on diagrams or drawings as part of department or section emergency instructions. This is to aid their location during emergency response.

7. Training in emergency preparedness for area managers and emergency teams should include the identification and operation of appropriate controls. This knowledge should be refreshed during drills.

8. Warning lights or devices should be designed into the system for highly critical facilities to reinforce knowledge of the correct control and its proper operation in an emergency.

9. Maintenance procedures should ensure that master and emergency controls are in working order.

10. Emergency shut-down procedures should include provisions for lock-out, reduction to a zero-energy or mechanical state, and tagging. This is to prevent a secondary accident or loss of the control of the emergency if the system were inadvertently turned back on.

11. Ensure all managers who would direct emergency actions, area supervisors, and system maintenance personnel should be trained in the lockout procedure so that all follow and observe it for assured safety during emergency as well as normal operations.

Prompt and positive location of controls to shut down or isolate systems is critical to efficient execution of an emergency plan. Taking time to find a control, operating the wrong control, or confusion over a control that operates in a non-standard way can lead to serious secondary accidents or thwart efforts to control an emergency situation. Methods that have proven successful in emergency actions are: color coding controls, equipment and systems; labeling of controls and system units; diagramming the controls and systems as part of written emergency instructions; and using lockout procedures. A side benefit of these program activities is their benefits to the safety of daily operations.

7.5 1. A facility-wide survey should be made of fire loss exposures and fire protection equipment to verify that adequate extinguishers, sprinklers, hydrants, and other equipment are both provided and properly located.

2. Validation of the survey should be based on worst-case exposures and applicable standards.

3. A facility-wide survey should be made of the means for detecting and reporting fires.

4. Validation of the survey should be based on periods of minimum and maximum occupancy, of fire risk, and the combustibility of facilities and materials.

5. A survey should be made to determine the needs for personnel protective equipment and rescue devices, and the provision of such equipment at the proper locations.

6. Validation of the survey should be based on personnel action specified in the emergency plan and the implementing procedures and instructions.

7. Special emergency and fire control procedures should be developed for areas where facilities or materials present significant explosion and health hazards.

8. The presence of toxic or reactive materials should be indicated by standard placards outside the areas and standard symbols on fire plans of the areas.

7.6 1. Emergency teams for the entire company should be organized and trained for initial and immediate response to emergency situations, as well as for protection of people and property when public emergency teams are not available to respond.

2. The need for emergency teams should be assessed on the basis of potential types of emergencies, the resources to be protected, and the availability of outside aid.

3. The following types of emergency teams are suggested:

    1. Fire brigades.
    2. Evacuation and rescue.
    3. Medical treatment.
    4. Security.
    5. Communications.
    6. Utilities.
    7. Fire protection system.
    8. Damage control.
    9. Public relations.
    10. And, investigation.

Emergency teams of organization people can be invaluable because they can respond quickly and are familiar with the area. They can, however, endanger themselves and others if they do not have the capacity, knowledge, and skill to perform the emergency tasks. The functions of the team, the physical and mental requirements as well as any licenses or certificates needed should be established as the basis for team membership selection. The person's availability during an emergency must be affirmed. Following selection, team members must be well trained and drilled so they can perform to requirements.

7.8 1. A system should be developed to classify and safeguard vital records to control business interruption and financial losses in the event of disaster.

2. The system should provide protection through protected storage or duplicate records at a remote site.

7.9 1. The emergency plan for the minesite should include a section on the resumption of work following an emergency.

2. Facilities should be certified as safe for occupancy before general employees enter and before systems are operated.

3. Provisions to use employees in other than their normal work, and provisions to use temporary employees during and after an emergency should be included in work contracts, employee orientation and placement programs, and in insurance programs. This should also include temporary suspension of employees until the workplace is safe for occupancy.

Consideration of the unusability of facilities for some time after an emergency situation is an essential part of planning. Accidents, fires, storms, riots and other disasters often result in extensive and varied damages. These can be the cause of secondary accidental losses if they are not detected and repaired before people go back to work.

7.10

1. Alternate means of communication should be developed so that vital information can be passed to the people involved in emergency actions.

2. Radio or messenger systems should be developed to alert managers and members of emergency teams when they cannot be contacted by telephone or other normal modes.

3. Back-up warning systems should be developed to ensure prompt evacuation of people from places of danger.

4. Primary and secondary methods of communication between the emergency control center, emergency teams, and outside sources of aid should be provided.

Communications are essential to an effective emergency plan. The planning process should define normal means of communications, and where those means are vulnerable to disruption. Back-up means must be provided wherever there is the slightest vulnerability.

7.11

1. A procedure should be set up to ensure that accurate, timely information on emergency situations is given to employees, to government agencies, and to the public media.

2. Information on potential hazards, dangerous areas, and the scope of the situation should be passed to employees as appropriate so they understand the situation.

3. When the public might be exposed to hazards as a result of the emergency situation, appropriate authorities should be notified and given sufficient information so they can protect the public or evacuate people to a place of safety.

4. All information released as well as instructions and directions to employees and emergency teams should be kept in a written record. This type of record is critical for substantiation of communications and for evaluation of response.

There are very significant potential problems in the phrasing of information, as well as in the failure to release information. The possible losses go well beyond injuries to personnel and damage to property. Erroneous assumptions by employees, the public, or the media can lead to damaging statements of willful negligence or of judgments at law, difficulties in financing repairs, and premium rates for supplies or services. People want information. It is to the organization's benefit to see that prompt, factual, undamaging information is provided.

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada

Organizational Rules

ORGANIZATION/LOCATION

PROGRAM AREA EVALUATED

25.4% - Moderate

September 12-15, 1989/M. D. Crucefix

EVALUATION LEVEL:

DATE / CONSULTANT :

EVALUATION FACTORS:		POSSIBLE POINTS	POINTS SCORED
8.1.	General Safety and Health Rules	70	55
8.2.	Specialized Work Rules	65	0
8.3.	Work Permit and Specialized Procedures Systems	95	13
8.4.	Rule Education and Review Program	100	43
8.5.	Rule Compliance Effort	75	20
8.6.	Use of Educational Signs & Color Codes	50	0
8.7.	Regular Program Monitoring	60	0
	TOTAL	515	131

Element Definition

Rules are general guidelines for proper conduct or action to control risks. They should complement a good task analysis and procedure program. Rules can be set to assure a degree of safety when risks cannot be totally controlled by engineering methods, by safeguards, or by task procedures. Rules can also serve as temporary measures of control while more effective methods are being designed or constructed. Two types of rules should exist at Denison - Potacan Potash Company - Sussex, New Brunswick: the first should be general and should apply to anyone at work anywhere on site whereas the second should be specific and tailored to the specific work being performed by various groups of employees.

Existing Noteworthy Efforts

8.1 1. General safety and health rules have been developed, published and distributed to employees at Denison - Potacan Potash Company - Sussex, New Brunswick.

2. The rules are written in easy to understand language.

8.3 1. Each employee receives a copy of the rules, and has each rule explained during the first week of employment or following transfer.

Suggestions for Continued Improvement

8.1 1. Significant loss exposures that cannot at the moment be controlled through engineering or safeguarding measures should be addressed in the rules. To be practical, the rules should be kept to a minimum.

2. The most critical rules should be printed in posters or other large type forms and posted in work areas where employees have an opportunity to see them often.

3. A system should be set up to ensure that the validity of rules is checked whenever there are changes in equipment, materials, processes, or facilities and that the rules are revised promptly when appropriate.

Rules are essential to orderliness in life. They guide behavior for everyone's benefit and safety. Organizations with effective safety and health rules programs follow common methods. They have rules that relate to specific major problems. They involve employees in identifying the problems and developing the rules to control them. They do not use rules as control measures where following the rules would go against normal human behavior; in such cases, they use other controls. Finally, they use as few rules as possible so that the critical rules will stand out and be remembered.

8.2 1. An inventory listing all the different types of occupations, trades, and crafts at the minesite should be made as the base of a survey of needs for craft rules.

2. Each occupation on this list should be evaluated for unique loss exposures that would dictate a need for control through special rules.

3. People within each occupation should be involved in the identification of risks and the development of pertinent craft rules.

8.3 1. More work is required in the area of confined space entry and excavation. Although some information was located during the audit, it was very loose and needs attention. In all cases no permits were located and the written procedure was a memo, not a true procedure endorsed by management.

2. Individual rules should be reinforced by pointing out their application during on-the-job training, in safety contacts, in work assignments, and in safety meetings.

3. Other employees' observances of the rules should be pointed out during a person's orientation to the work section.

4. All relevant rules should be reviewed with employees at least once a year to refresh their knowledge of rules they may have forgotten or might not apply regularly.

5. The employees' understanding of the rules should be verified with questions about the use of the rules.

People cannot be expected to know health and safety rules and to use them correctly unless they are educated on those rules. People learn rules the same way they learn anything else. That is by repeated presentation of the rules, by study of their application, by test of knowledge, by follow-up supervision, and by example. Since rules are not as certain as engineering controls, rules education is very important to the effectiveness of rules as accident controls. Rules education must be planned, scheduled, performed, and documented.

8.4

1. A policy on safety and health rules discipline should be written as a guide to managers at all levels and to ensure consistent treatment of all employees, salaried and hourly.

2. This policy should prompt recognition of those who comply with the rules as well as for correction of the behavior of those who don't.

3. The policy should be written into labor agreements, employee handbooks and other communications on employee responsibilities and actions.

4. When correction of behavior is necessary, the policy should help determine whether recognition, retraining, practice, or a specific level of punishment is appropriate.

5. Program records should be developed to provide documentation of all disciplinary measures, including commendations, retraining, reprimands, and suspensions.

6. Periodic measurements, using sampling techniques, should be made to verify the degree of compliance with critical rules.

Rules have little value if they are not followed. Effective compliance enforcement requires three things. Those are good examples by all managers, recognition of good compliance, and appropriate corrective measures on deviations. The higher the risk, the more intense each of these actions should be. Nothing prompts good behavior like example and recognition. The best leaders speak through their actions. Then they commend those who also comply. This lets people know that their compliance with safety and health rules is noticed, that it matters, and that it should continue. Where there are deviations, the manager must first learn the reason and then act accordingly. Lack of knowledge is corrected only by education. Oversight is corrected by reinforcement. Willful violation of negligence is corrected by punishment commensurate with the severity of the risk.

8.5 1. A program should be developed to reinforce critical rules with instructional signs and markings.

2. The signs should be in standard color-codes to aid communication of the degree of hazard.

3. A survey of the entire facility should be made to determine where signs and markings should be placed.

Even those who know the rules best can forget them or overlook their application at times. These times are usually when people are mentally overloaded. They often coincide with times when there have been temporary changes and the situation is conducive to an accident. People have natural reactions to certain colors. These colors can be used to help peoples' perception of danger and stimulate their memory of critical rules.

8.6 1. Evaluations of managers' performance in administering safety and health rules, and of the effectiveness of the rules, can give vital feedback on the program. Such evaluations should be made quarterly, using random sampling techniques.

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada

ORGANIZATION/LOCATION

Accident/Incident Analysis

PROGRAM AREA EVALUATED

32.4% - Moderate

EVALUATION LEVEL:

September 12-15, 1989/M. D. Crucefix

DATE / CONSULTANT :

EVALUATION FACTORS:		POSSIBLE POINTS	POINTS SCORED
9.1.	Performance Statistics Computed and Used	105	75
9.2.	Occupational Injury and Illness Analysis	150	72.5
9.3.	Property & Equipment Damage Analysis	80	0
9.4.	Problem Solving Project Teams	60	0
9.5.	Incident (Near-miss) Analysis	60	0
	TOTAL	455	147.5

Element Definition

Accident/incident analysis involves compiling causal data from individual events and periodically summarizing them so that trends or major concerns can be identified. Accident and incident analysis also involves the periodic summary of the consequences of undesired events such as the number of recordable injuries, or illnesses, the costs of accidents, etc. Accident and incident analysis can provide feedback on program effectiveness through measurement of results. By structuring data on accidents and incidents, Denison - Potacan Potash Company - Sussex, New Brunswick managers can set trends which point out loss exposures not identified, risks improperly evaluated, and controls which are less than adequate.

Existing Noteworthy Efforts

9.1 1. Disabling occupational injury and illness rates are computed and communicated to general managers for their consideration in directing the organization's activities.

2. Severity of losses as well as frequency of occurrences are computed for evaluation of the impact of accidents on the organization.

3. The rates are computed and distributed monthly.

Suggestions for Continued Improvement

9.1 1. Property damage accident rates and cost summaries should be computed as part of the measurements of consequences of accidents.

2. Fire rates and loss cost summaries should be completed as one of the measurements of accidental losses.

9.2 1. Personal harm accident and incident analysis data should be tabulated and published for divisions within the organization, as well as for the organization as a whole.

2. Where work control is by occupation, analysis data should also be tabulated by occupations.

3. Accident and incident analyses should include the following factors:

    1. Equipment being operated.
    2. Materials/substances being used.
    3. Agency of the incident; the item that inflicted the personal harm.
    4. Activity at time of injury in terms of customary or irregular work.
    5. Ages of the persons harmed.
    6. Ages of persons associated with primary personal cause factors.
    7. Length of experience of persons harmed and involved with personal cause factors.
    8. Time of day of incident.
    9. Time into workshift of incident.
    10. Immediate causes; substandard practices and conditions.
    11. Basic causes; personal and job factors.
    12. And, origins of incidents; inadequate programs, standards, or compliance.

The tabulation and analysis of accident facts and factors help separate the isolated incident from the chronic safety problem. It aids in the revelation of the subtle such as fatigue, stress, and miscommunication.

9.3

1. Property and equipment damage incident data should be tabulated and published for divisions within the organization, as well as the organization as a whole. The tabulations and analyses should include:

    1. Types of property damage/loss incidents.
    2. Equipment being operated.
    3. Materials/substances being used.
    4. Agency of the incident; the item inflicting the damage.
    5. Activity in terms of regular or irregular work.
    6. Part of equipment/structure damaged.
    7. Age/condition of equipment involved.
    8. Length of experience of people associated with personal or job cause factors.
    9. Time of day of incident.
    10. Time into workshift of incident.
    11. Time since last preventive maintenance performed on equipment involved.
    12. Immediate cause factors; substandard practices and conditions.
    13. Basic causes; personal and job factors.
    14. And, origins of damage incidents; inadequate programs, standards, or compliance.

2. When repair of equipment or facilities, or replacement of parts, is required because of accidental damage or abnormal use, that fact should be noted in maintenance records and reported for investigation.

3. The data analyst should include, in property damage incident analyses, notations on significant trends and repetitive damages or abnormal wear.

4. Responsible managers or project teams should review damage analyses for items that should be added to the critical parts inspection inventory described in element three of this report.

5. The costs of property damage incidents should be charged back to the respective department as an effective management practice.

Property damage incident analysis is a vital part of an effective safety and health program. Extensive research has revealed that there are thirty property damage accidents for every serious injury. The damage accidents have many of the same basic causes as the injuries. When these are tabulated and analyzed, the entire safety program benefits. In addition, the savings in accident costs can pay back many times the costs of the personnel safety and property programs.

9.4

1. Project teams should be used at Denison - Potacan Potash Company - Sussex, New Brunswick to research significant safety problems identified through accident/incident analysis, to develop effective remedial actions for these problems, and to audit the effectiveness of the remedial action.

2. A team should be set up to work on each specific problem, or on problems that are closely related.

3. Each team should be made up of people who have an interest or involvement with the problem.

4. A team should be disbanded when the problem has been solved and the remedial actions are verified effective.

5. A member of management from the department with the greatest interest in the problem should be designated as chair-person. This manager's level should be commensurate with the loss potential and the authority needed for remedial actions.

6. Project teams should meet regularly to share information members have learned individually and to prompt regular progress toward the project objective.

7. A periodic summary of the teams' activities and progress should be given the general manager at least quarterly.

The team approach to problem solving is an effective technique used by leading organizations. It brings together people from the various activities within an organization and gives them a central purpose on which to focus their activities. It is essential that the team be limited to those who can be a resource, that its purpose be defined by the convening authority, and that it have the necessary authority to obtain the information needed and take the action it decides upon. The convening authority's charge to the team should include purpose, authority, frequency of meetings, reports required, performance expected, and dissolution on completion of the project.

9.5 1. Incidents not resulting in losses should be analyzed for loss potential and trends.

2. The scope of tabulations and trends will vary with the depth of investigation and reporting. When possible, analysis should be comparable to personal harm and property damage analyses.

Incident analysis is critical to achieve a high degree of loss prevention. Extensive studies have shown that there are six hundred incidents for every serious injury. Many of these incidents have the potential for serious losses and the degree of loss is a matter of chance or a slight variation in circumstances and controls. All of these incidents have the same basic cause factors and therein lies the value of incident analysis.

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada

ORGANIZATION/LOCATION

Employee Training

PROGRAM AREA EVALUATED

36.4% - Moderate

EVALUATION LEVEL:

September 12-15, 1989/M. D. Crucefix

DATE / CONSULTANT :

EVALUATION FACTORS:		POSSIBLE POINTS	POINTS SCORED
10.1.	Training Needs Analysis	195	40
10.2.	Employee Training Program	350	191
10.3.	Training Program Evaluation	130	15
	TOTAL	675	246

Element Definition

The employee training element measures work being done at the mine to formally provide workers with the competency and proficiency to perform their work properly to the standards for production, quality and safety. To properly accomplish this the program must ensure that: 1. the training needs for each occupational position are identified; 2. formal training programs which address the training needs are in place; and 3. the effectiveness of the entire training program is periodically measured.

Existing Noteworthy Efforts

10. The employee training program at Denison - Potacan Potash Company is not as formal as I would like to have seen it for an organization some 4 years old. However, they are completing some things presently and therefore credit will be acknowledged for those items.

10.2

1. A good variety of visual aids are used in training courses to help create mental pictures of the information presented and to aid memory of critical steps in jobs taught.
2. Written and oral tests, as well as observation of performance, are used to verify trainees' knowledge and the reliability of their performance.
3. Training completed, test scores, and instructors' appraisals of trainees' performance are noted in personnel records. This provides future reference and aids scheduling of employees for progressive training to upgrade their knowledge and skill.
4. Employees are given certificates of some training completed successfully as one form of knowledge reinforcement through recognition.

Suggestions For Continued Improvement

10.1

1. A job training needs inventory should be made, listing all tasks performed, as an aid to identifying employee training requirements. This can be the same inventory used in Elements 4, 8 and 12. .
2. Each job should be broken down into tasks performed and coded as to degree of risk, difficulty of learning, extent of knowledge required, and special or precise skills needed.
3. A survey of applicable safety and trade legislation should be made and all training required by law or regulation listed in the inventory.
4. The inventory should be updated as jobs are added, changed, or deleted. It should be reviewed at least once a year to ascertain that it is current and correct.
5. Any training required by the organization safety program, such as training of safety committee or project team members, should be included in the inventory.

The organization of the training program must be methodical to ensure that lack of knowledge or skill is minimized as a basic cause of accidents. This has a second facet in that job knowledge is the core of the proper motivation. The only way an organization can be certain it does not overlook training requirements is to first prepare a list of all jobs and, from that, develop an inventory of training needs.

10.2

1. A comprehensive formal training program should be developed within the entire organization. This is necessary to ensure that employees acquire the knowledge and skill that the organization wants them to have in order to be productive and safe on the job.

2. The agenda for each training program should be built around the needs for knowledge and skill identified in the inventory.

3. The basis for and use of procedures developed through methods engineering or job analysis should be included in the appropriate training course agenda.

4. Course texts, handouts, procedures, checklists, manuals and similar written materials should be developed to supplement classroom lesson plans. These reinforce the classroom communications with trainees and provide future reference for self-refreshing of knowledge.

5. The "motivate-show and tell-test-check" method of job instruction should be used to teach work practices and procedures. This method is proven effective in developing job skills.

6. A lesson plan of topics to be covered, key points, and methods of presentation should be developed for each training program. The lesson plan prompts consistency and completeness of information communicated with trainees.

7. The effectiveness of the training in communicating job knowledge to employees should be verified with oral questioning, written tests, observation of performance, or a combination of these.

8. Employees should be given certificates of all course completion to reinforce their knowledge and motivation through this recognition.

9. Certificates should be given to recognize achievement of defined skill levels, based on demonstrated performance, as an incentive to learn and practice the associated skills.

10. When employees are transferred within an organization, their skill level, experience, and training should be reviewed and the employee retrained whenever there is not complete knowledge for the tasks of the new job, or the procedures and methods differ.

11. Employees should be given training which reviews and up dates the original training at least every three years to reinforce education on critical tasks and to correct any improper practices the person may have acquired.

Formal training is essential for an employee to meet standards for production, quality, and safety in critical jobs. To be effective, training must be well organized, and the training sessions well prepared. Good training programs have several things in common. Those things are defined subjects, lesson plans, written materials, visual aids, tests, records, and certificates.

10.3 1. An evaluation of the training program should be made at least every six months, using sampling techniques. The evaluation should include verification of:

1. A current training inventory.
2. Prompt employee scheduling and validation of attendance.
3. Lesson plans for courses.
4. Written materials for trainees.
5. Use of visual aids.
6. Adequate presentation of material.
7. Objective tests and observations.
8. Presentation of certificates.
9. Documentation of attendance and test scores or demonstrated performance.
10. And, validation of interviews with people trained in courses.

The internal audit and evaluation are critical to make certain that programs are well organized and presented, and that employees receive the training which management wants them to have.

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada

ORGANIZATION/LOCATION

Personal Protective Equipment

PROGRAM AREA EVALUATED

68.9% - Substantial

EVALUATION LEVEL:

September 12-15, 1989/M. D. Crucefix

DATE / CONSULTANT :

EVALUATION FACTORS:		**POSSIBLE POINTS**	**POINTS SCORED**
11.1.	Personal Protective Equipment Standards	160	125
11.2.	Personal Protective Equipment Record Keeping	70	30
11.3.	Enforcement of Standards	155	155
11.4.	Regular Program Monitoring	65	0
	TOTAL	450	310

Element Definition

This element measures whether the personal protective equipment program at Denison - Potacan Potash Company - Sussex, New Brunswick includes the selection, fitting, use, and maintenance of clothing, equipment, and devices for personal wear. These items provide barriers to physical and health hazards in order to prevent or reduce the transfer of various forms of energy to the human body. Personal protective equipment should be used to control operational risks only after engineering, administrative or procedural measures have proven to be inadequate.

Existing Noteworthy Efforts

11.1 1. The proper types of protective equipment for potential exposures have been identified to employees. Employees' representatives assist in identification of needs and selection of models or styles of equipment. This provides motivation for proper use.

2. Facilities and materials for the cleaning and maintenance of equipment are provided in convenient locations.

11.2 1. Personal protective equipment records are in place.

11.3 1. Use of protective equipment is excellent, as verified by sampling.

2. Special recognition is given when the use of protective equipment averted an injury or reduced the degree of physical harm.

Suggestions For Continued Improvement

11.1 1. Employees should be instructed on proper fitting and use of all equipment, or have equipment fitted by people who have been trained to do so.

2. The cleaning and repair of protective equipment should be included in job instruction when employees are expected to do it.

3. Program standards should include supervisors' inspection of employees' protective equipment. Supervisory development training should consequently, include equipment inspection and maintenance.

Personal protective equipment is not as effective a control of exposure to an energy hazard as engineering controls or physical barriers. A lot of study has to go into the selection of equipment and devices to make certain they are appropriate for the hazard and compatible with the environment and the other equipment used. A vital part of the protective equipment program are the standards to prompt proper selection, fitting, use, cleaning, repair, and replacement.

11.2 1. Periodic analyses of the rate of use, as well as the type and nature of wear or damage, should be made to verify that proper equipment is used and to identify problems.

2. Data should be compiled by individual, by occupation, and by department or work section.

3. The analyses can indicate unidentified or incorrectly evaluated exposures, inadequate equipment, inadequate cleaning and maintenance, inadequate employee training, or inadequate supervision.

Adequate records are an important part of managing a personal protective equipment program. The records provide information that will help ensure that people get appropriate equipment, that they are educated on its use and are fitted correctly. As a final point, records aid enforcement of compliance.

11.3 1. The degree of compliance with each type of personal protective equipment should be measured, using sampling techniques.

2. The disciplinary policy should be developed as a joint effort of management and employee representatives to emphasize that compliance is in the best interests of the individual, of employees as a group, and of the organization.

3. Employees who comply with protective equipment standards should have such performance recognized and commended.

4. When compliance is exceptional in degree or under the particular circumstances, the commendation should be in writing and noted in employee records.

Compliance is essential if a protective equipment program is to have credibility. Credibility, in turn, is needed so people will use equipment effectively. Compliance starts with good example by all managers. Its life blood is clearly defined standards with good communication of these standards. A final essential is consistent, full enforcement with recognition of those who comply and fair treatment to correct the behavior of those who do not.

11.4 1. Periodic measurements of compliance with protective equipment standards should be made, and the effectiveness of program management evaluated.

2. The evaluation should be made at least every quarter, with random sampling throughout the three months.

3. Findings should be communicated to all levels of management.

Feedback is the basis on which successful efforts are continued and unsuccessful efforts are improved. Extensive measurements are necessary when the program is being developed or compliance is uncertain, but some regular measurement is needed to confirm sustained performance. Protective equipment compliance is one of the critical indicators of program effectiveness because exposures are critical and behavior is individual.

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada

ORGANIZATION/LOCATION

Health Control and Services

PROGRAM AREA EVALUATED

36.1% - Moderate

EVALUATION LEVEL:

September 12-15, 1989/M. D. Crucefix

DATE / CONSULTANT :

EVALUATION FACTORS:		POSSIBLE POINTS	POINTS SCORED
12.1.	Health Hazard Identification	150	30
12.2.	Health Hazard Control	170	103
12.3.	Information/Training/Education	80	40
12.4.	Industrial Hygiene Monitoring	75	0
12.5.	Health Maintenance Program	35	25
12.6.	Professional Assistance	75	13
12.7.	Communications	35	22
12.8.	Records	25	0
	TOTAL	645	233

Element Definition

This element measures work being done at Denison - Potacan Potash Company - Sussex, New Brunswick to protect employees' health as well as post-incident emergency care actions. Health control consists of identifying, evaluating, and controlling occupational health hazards. Emergency care includes the actions to treat occupational injuries, as well as the facilities and equipment which exist to ensure that proper emergency treatment can take place.

Existing Noteworthy Efforts

12.1 1. A good program has been developed to identify occupational health hazards. This is done through a listing of all jobs, an inventory of chemicals, Material Safety Data Sheets, and on-site analyses by qualified personnel.

12.9 1. At least one supervisor who has been trained in urgently necessary first aid measures is available in each area during work hours.

12.10 1. All first aid facilities are equipped and maintained to legislative or consensus safety standards.

12.11 1. Qualified attendants are available at established medical aid stations during work hours.

12.13 1. Employees are informed personally when medical examinations reveal a health problem or when they have an exposure to a significant health hazard.

12.15 1. First aid training is available to employees. A significant number have voluntarily taken this training.

Suggestions For Continued Improvement

12.1 1. An inventory should be made, listing all occupations and their related tasks, to identify those that could have exposure to airborne contaminants, skin irritants, radiation, noise, extremes of temperature, or oxygen-deficient atmosphere.

A special effort to assess occupational health hazards is necessary because many of these hazards are not visible to the eye or perceived on a casual survey of an area. Most require first a recognition of presence through substance labels or data sheets, equipment placards, etc. Then a measurement of exposure and reference to a document giving exposure limits are needed to evaluate the risk.

12.2 1. There should be a continuing effort to upgrade the effectiveness of controls, as new measures become available or possible, as long as the exposure continues to exist.

2. Written procedures, including handling and emergency actions, for each substance should be provided to the supervisor of each area where the materials is handled, stored, or used.

12.3 1. A program to communicate information on health hazard exposures and treatment should be developed.

2. Supervisors at the minesite should receive training in occupational health fundamentals so they can be sensitive to exposures, personal health problems, and proper emergency actions.

3. Health hazards and their control should be included in all formal training, job instruction, and personal contacts.

4. Bulletins, booklets, and other written information on occupational health exposures that are relative to jobs performed should be made available to employees and discussed in group meetings.

Because of the inherent differences between physical hazards and occupational health exposures, good communication to supervisors and employees is essential. Most of the exposures require professional evaluation, but people must be made aware of the serious nature of health hazards and the necessity of following control measures carefully.

12.4 1. Management should conduct ongoing programs of supervisory observation and professional monitoring of health exposures and compliance with control measures.

2. Where employees make atmospheric tests or use exposure measuring devices, they should be adequately trained and supervised.

12.5 1. A procedure should be established for an occupational health review of processes at the design stage to assess potential health hazards in new or modified processes.

2. Existing processes should be analyzed periodically for health hazards to detect and control effects of changes in materials or environment.

12.6 1. Management should review records of health monitoring and health hazard identification activities to assess impact on the organization and the need for additional control measures.

12.8 1. Each work area, not just security, should have a list of available emergency medical services with telephone numbers, or other instructions for obtaining assistance, for quick reference.

2. The emergency services should be selected on the basis of potential physical and health hazards.

3. The list and telephone numbers should be checked periodically and kept up-to-date.

4. Information on emergency treatment for exposure to substances posing extreme health hazards should be provided to emergency services in advance and be readily available for them when called on an incident.

5. The emergency response procedure should be reviewed periodically by the organization's medical advisor.

Accidental physical harm to people requires prompt response and precise treatment. Timeliness is often the difference between a minor loss and a serious one. Planning is critical to prompt notification of the appropriate medical emergency service.

12.10

1. First aid treatment kits should be provided so they are readily available for emergency treatment. They should contain items appropriate to the exposures in the work area.
2. The contents of emergency kits should be selected with the advice of a medical advisor.
3. Kits should be inventoried frequently and kept stocked with materials in good condition.
4. A treatment log should be kept with each kit or in each first aid room to give feedback on injuries and treatment.

12.13

1. Employees' exposures to health hazards as the consequence of failure of a control measure, an improper risk evaluation, or failure to identify a health risk should be communicated to management for appropriate remedial action in the safety and health program.

12.14

1. Data on health hazard exposures, treatment, and health maintenance should be included in employees' records.

12.15

1. First aid training should be offered to employees' family members as a program to reduce the losses due to off-the-job injuries and illnesses.

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada

Program Evaluation System

ORGANIZATION/LOCATION
No Measurable Activity

PROGRAM AREA EVALUATED
September 12-15, 1989/M. D. Crucefix

EVALUATION LEVEL:

DATE / CONSULTANT:

EVALUATION FACTORS:		POSSIBLE POINTS	POINTS SCORED
13.1.	Evaluation of Management Compliance with Program Standards	130	0
13.2.	Evaluation of Compliance with Standards for General Physical Conditions	90	0
13.3.	Evaluation of Compliance with Fire Prevention and Control Standards	85	0
13.4.	Evaluation of Compliance with Occupational Health Standards	90	0
13.5.	Program Evaluation Systems Recordkeeping	35	0
	TOTAL	430	0

Element Definition

Comprehensive evaluations or audits are necessary to verify that the safety program as well as the physical facilities at Denison - Potacan Potash Company - Sussex, New Brunswick are in compliance to standards prescribed in codes, industry or consensus standards, and regulations. These evaluations measure performance of the safety program as well as compliance of the physical work environment, followed by assessment of the overall compliance to appropriate standards, codes, regulations, and recommendations for corrective actions.

Existing Noteworthy Efforts

13. Because no measurable activity was recorded in this element, no commendations are appropriate at this time. The element is to be completed over several years when you have a reasonable ISRS measurement in place. Concentrate on those elements that will give your company good solid program development prior to attempting this element.

Suggestions For Continued Improvement

No report required for this area.

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada

Engineering Controls

ORGANIZATION/LOCATION

12.7% - Minimal

PROGRAM AREA EVALUATED

September 12-15, 1989/M. D. Crucefix

EVALUATION LEVEL:

DATE / CONSULTANT :

EVALUATION FACTORS:		**POSSIBLE POINTS**	**POINTS SCORED**
14.1.	Design Engineering Considerations	235	65
14.2.	Process Engineering Considerations	170	0
14.3.	Regular Program Monitoring	105	0
	TOTAL	510	65

Element Definition

Engineering controls are essential for an effective pre-contact method of accident/incident control. These controls can identify and eliminate hazards before they create situations for loss within Denison - Potacan Potash Company - Sussex, New Brunswick. Costs of such controls are minimal in comparison to the costs of redesigning or potential loss of life and property.

Existing Noteworthy Efforts

14. Because of no high level of measurable activity in this element, no commendations are appropriate at this time. This is another element that can be concentrated on later in your program development. This element will assist you when developing programs for any new process changes or additions to the minesite.

Suggestions for Continued Improvement

14.1

1. An organizational engineering policy or directive should be written requiring formal safety and health/loss control reviews at the conception and design stages of all new development, construction and modification projects. This policy or directive is to be signed by the general manager to emphasize commitment in the health and safety program.

2. A safety in design program should be developed to ensure that all appropriate safety and health standards, codes, and regulations as well as applicable loss experiences are researched and the information incorporated into the design of modifications or new facilities.

14.2

1. A safety review of modification or new facility concepts, preliminary and final designs, and changes made during construction should be made for the entire minesite to verify compliance with safe design criteria.

2. The safety review should be substantiated by signature on design proposals and drawings.

3. Audits of engineering records for the entire minesite to measure compliance with standards for safety in design should be made every three months, using sampling techniques.

4. All production processes, especially underground, should be reviewed and analyzed for compliance with safety and health standards, codes, and regulations. This is to establish a base of facilities that are in compliance.

5. The workplace design and layout should be examined for safety and health factors to assess any existing loss exposures and productivity problems in the existing facilities.

The basis of an effective safety program in a productive organization is the design of facilities to safety and health standards, codes and regulations. This prevents the costs of retrofits on top of costs of accidents. It ensures a more efficient workplace when safety, production, and quality are built from the concept phase forward. The essentials of safe design are research and communication between engineering, operations and safety.

14.3

1. A methods and standards engineering program should be developed to ensure that operating and maintenance procedures and practices are developed along with system hardware.

2. The methods and standards should be included in employee training and communications programs.

3. A safety and health review should be made of all methods and standards.

4. The safety and health review should be verified with a signature on the written method or standard.

Proper methods of operating and maintaining facilities are ranked in importance only after safety in design and construction to design standards. Methods and standards are essential to control the loss exposures that could not be engineered to an acceptable level of risk. To preclude abuse and losses, the methods must be developed concurrently with the hardware, then communicated to the appropriate people.

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada
ORGANIZATION/LOCATION

Personal Communications
PROGRAM AREA EVALUATED

27.8% - Moderate
EVALUATION LEVEL:

September 12-15, 1989/M. D. Crucefix
DATE / CONSULTANT :

EVALUATION FACTORS:		POSSIBLE POINTS	POINTS SCORED
15.1.	Training in Personal Communication Techniques	115	115
15.2.	Job Orientation/Induction	100	0
15.3.	Task Instruction	115	0
15.4.	Planned Personal Contacts	65	10
15.5.	Regular Program Monitoring	55	0
	TOTAL	450	125

Element Definition

The personal communications element measures the program at Denison - Potacan Potash Company - Sussex, New Brunswick to encourage one-to-one exchanges of information between people. This could be between first-line management and an employee, or between two employees, one of which has greater knowledge of a particular thing. Personal communications are the means by which minimally qualified people develop high levels of knowledge and skill through others sharing knowledge they have acquired.

Existing Noteworthy Efforts

15.1 1. Supervisors receive training in effective communications techniques.

2. The training includes communication principles, plus techniques for giving skill development coaching.

15.4 1. Safety contact record cards and incentive programs are used to promote an effective personal contacts program (5 point safety program).

Suggestions For Continued Improvement

15.1 1. A program should be developed to train supervisors, and other employees who give job instruction, in personal communications principles and techniques.

2. This training should be an integral part of a complete program to develop and affirm management skills in people to be appointed to supervisory positions.

3. The personal communications program should instruct supervisors on, and have observed practice of, the techniques for:

   1. Proper job instruction.
   2. Skill development job coaching.
   3. Concise task assignments.
   4. Key point safety tips.
   5. And, job orientation.

Effective personal communications is an acquired skill. Most of the work that develops a person's qualifications for a supervisory position does not include this skill. Yet, much of a supervisor's effectiveness depends on the ability to communicate well with employees on matters of production, quality, and safety.

15.2 1. A formal job orientation program, to be conducted by supervisors at the work site, should be developed as a program standard.

2. People who are to conduct formal job orientations should be designated in writing by name and title to emphasize the importance of the orientation activity.

3. A time and duration should be specified by directive to give supervisors the necessary authority to give their time and employees' time to the orientation. The time should be based on a written outline of this orientation.

4. The orientation should include, as a minimum, the person's job and interfaces with other employees, general safety rules, personal protective equipment use and care, emergency exits and procedures, location and use of emergency equipment, first aid and medical facilities, accident reporting, personal hygiene facilities, and general safe work practices.

5. Follow-up orientation sessions should be conducted within a month of initial orientations to reinforce critical safety and health information and to answer questions that may have come up. The follow-up sessions should also be scheduled and documented.

The orientation welcomes the person into the job, rather than have him or her thrown into it. It gives the employee a personal introduction to the job and to the safety program as it is conducted at the work site. The job orientation complements and personalizes the formal organization orientation given groups of new employees. The job orientation is essential to give the employee general knowledge of safety on the particular job, and the motivation to work safely that comes from the feeling of being wanted and needed in the job.

15.3 1. A standard requiring managers to ensure that people are given instruction on how to do each new or differing job properly should be written.

2. The standard should prescribe use of a proven instruction technique such as the Proper Job Instruction "motivate-tell and show-test-check" method.

3. Supervisors should be provided written guides on giving job instruction so they can refer to these guides to refresh knowledge of the instruction technique.

No facet of communication is more important than instructing people on how to do their work properly. People need to know what they are expected to do, how they should do it, and what latitude they have for proper job instruction; production, safety, quality and cost control. The trained employee works safer because he or she knows how to work better.

15.4 1. A standard for planned safety contacts should be written to prompt supervisors to give employees information that will increase their knowledge and skill or help them apply their knowledge to different situations.

2. The standard should define the nature and use of key point safety tips, job coaching, and task assignment types of safety contacts and personal communications.

3. Personal contacts should be required at least weekly for each employee, and when assigning a critical or high risk task to an employee.

4. Each supervisor should be provided with personal forms to record safety contacts as an aid to management of this part of the personal communications program.

5. Performance appraisals, recognitions, and other incentives for supervisors should be based in part on their planned personal contacts.

6. Performance to standards for personal contacts should be audited for both frequency and quality of these communications.

The personal contact is the means for planned, guided growth and development of employees. Training provides knowledge of how to work under general circumstances. The personal contacts perfect and refine that knowledge and apply it to the rare or difficult situations. People can learn through their mistakes, which are wasteful and often harmful. Or, they can learn through planned personal contacts by supervisors or other employees with better knowledge of a specific task or problem.

15.5

1. Audits of performance to personal communications program standards should be made at least every six months, using sampling techniques.
2. The audits should verify that people are receiving job orientation, task instruction, and personal contacts.
3. The audits should verify that supervisors know and use proper job instruction methods.

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada

Group Meetings

ORGANIZATION/LOCATION
70.0% - Substantial

PROGRAM AREA EVALUATED
September 12-15, 1989/M. D. Crucefix

EVALUATION LEVEL:

DATE / CONSULTANT :

EVALUATION FACTORS:		**POSSIBLE POINTS**	**POINTS SCORED**
16.1.	Group Meetings	180	155
16.2.	Record Keeping	60	60
16.3.	Management Involvement	100	35
16.4.	Regular Program Monitoring	60	30
	TOTAL	400	280

Element Definition

This element is evaluating the program at Denison - Potacan Potash Company - Sussex, New Brunswick to ensure that group safety meetings are used as a means to increase or update employees' knowledge of how to work safely. The intent of this program is to ensure that superintendents at the minesite carry out formal safety talks with all their employees at an acceptable and a regularly scheduled frequency.

Existing Noteworthy Efforts

16.1 1. Group meetings are held regularly and attended by all employees at Denison - Potacan Potash Company - Sussex, New Brunswick.

2. Guidance is provided to insure that critical topics are covered at appropriate times and before recurring or seasonal exposures are encountered.

3. Program topic outlines and visual aids are made available to supervisors for their use in group meetings.

4. Handout materials to reinforce information on critical loss exposures are provided or ordered for supervisors' use.

16.2 1. Group meetings are documented by supervisors. The records give dates, subjects, and attendance.

Suggestions For Continued Improvement

16.1 1. A group meeting standard should be written to prescribe the frequency and duration of meetings, manner and subjects presented, attendance and disciplinary measures, records, training of supervisors in safety talk techniques, upper management participation, and follow-up on action items from meetings.

2. Pertinent items from management meetings, inspections, investigations, job observations, job analyses, and from safety and health committees should be presented and discussed at group meetings.

3. The frequency and duration of safety meetings should depend on the situation, but meetings should be held at least once a month for a total time of about an hour. Several short meetings are generally more effective than one long one provided attendance is not too inconvenient.

4. All supervisors should be trained in safety talk techniques so they will give effective short presentations of safety and health information.

One of the most important modes of safety and health communication is the group meeting. Group meetings allow the most economical use of time, and aid consistency in giving the same information to all employees. Meetings also encourage participation; they give people chances to voice ideas or ask questions in reaction to topics presented. In these ways, they also help employee motivation.

16.4 1. Audits of performance to standards for group meetings should be made at least once each three months, using sampling techniques.

2. The audits should verify that meetings are being held, that employees attend or appropriate disciplinary measures are taken, and that action items are followed through to correct safety and health problems.

3. The evaluations should assess the quality of supervisors' presentations, the validity of the topics discussed, and the effectiveness of the meetings in educating employees.

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada

General Promotion

ORGANIZATION/LOCATION

PROGRAM AREA EVALUATED

39.7% - Moderate

September 12-15, 1989/M. D. Crucefix

EVALUATION LEVEL:

DATE / CONSULTANT :

EVALUATION FACTORS:		**POSSIBLE POINTS**	**POINTS SCORED**
17.1.	Safety Bulletin Board Program	45	24
17.2.	Use of Program Statistics & Facts	45	40
17.3.	Critical Topic Promotion	50	0
17.4.	Use of Awards or Recognition	40	0
17.5.	Program Information Publications	20	18
17.6.	Group Performance Promotion	50	0
17.7.	Housekeeping Promotion	40	20
17.8.	The Neil George System or Its Equivalent	50	24
17.9.	Records of Program Promotion Activities	15	15
	TOTAL	355	141

Element Definition

A general promotion program comprises those activities to reinforce safety and health knowledge through employee incentives, displays, special events, and publications. This is the one element that focuses on the programs at Denison - Potacan Potash Company - Sussex, New Brunswick directed towards changing total employee attitude.

Existing Noteworthy Efforts

17.1 1. Bulletin boards are located where they are readily accessible to all employees during the work day, and are positioned for easy reading.

2. The safety posters that are used are appropriate to area activities and give positive information.

17.6 1. General managers make public presentations of the group awards to give emphasis to the program accomplishments.

17.8 1. The five point safety system (Neil George System) is used effectively in the mine.

Suggestions For Continued Improvement

17.1 1. Safety and health bulletin boards, with materials organized for attractive appearance and effective communication should be put up in work areas. Not all bulletin boards presently meet this criteria.

2. Safety and health bulletin boards should be lighted so the people on night shifts can read them.

3. A standard should be developed to regulate the items that will be placed on safety and health bulletin boards.

4. The authority to choose and approve items for bulletin boards should be designated.

5. Materials should be changed at least weekly and no item should be left for more than one month.

6. New or critical items should be identified by special markings to call people's attention to them.

7. Safety posters put on bulletin boards should be pertinent to employee activities in areas near the respective boards.

Bulletin boards are a passive means of communication. To be effective, therefore, the information presented on them must be dynamic. It must attract the eye. It must be brief so it can be read quickly. It must be simple and direct. Finally, the material must be changed often so there is usually something new on the board. The standard for bulletin boards must include all these conditions or the boards will not be effective.

17.3 1. An organized safety and health promotional campaign with a central theme should be conducted at least every three months.

2. During each campaign many of the major program activities should be focused, at least in part, on topics related to the central theme. Some of the activities which could be directed to a theme are promotional messages, management meetings, safety and health committee activities, special inspections, job analyses and procedures, job observations, emergency drills, employee training, personal protective equipment, emergency care of injured and ill, personal contacts, group meetings, and off-the-job safety.

3. The safety and health themes should be related to identified critical problems within the organization, rather than national themes that might at the time have limited or no application to the organization's loss exposures.

4. The theme campaigns should be organized and conducted by people from various levels within the departments most affected by or involved with the particular loss exposure.

5. An upper level manager should be appointed to chair each promotional theme campaign. This is necessary to give access to resources, to give close correlation to operational interests, and for most effective direction of all the activities involved in the campaign.

An organized theme campaign provides unity of effort, visible involvement of managers, and the mental impact of repetition. When many different activities in the various program elements are focused on a single critical problem the result is improved control of the multiple basic causes of that problem. World leaders in safety and health have found such theme campaigns most effective when directed by a high level operating manager. Such people usually have greater ability to organize, better access to resources of people and materials, better knowledge or operational work that will interface with campaign activities, and authority to direct most of the activities desired.

17.4 1. Individual recognition and awards should be developed to give people added incentive to carry through the safety and health program activities.

2. The primary incentive should be personal recognition for all performance to or above standards. This recognition may be verbal or written commendations, and comments in individual performance appraisals.

17.5 1. Special publications with information concerning critical safety and health problems should be distributed to managers. These can be copies of published materials, feedback on progress in program activities, or briefs written on the critical problems from safety department research.

2. To give impact to the special communications, differing methods should be used. Unique approaches can reinforce people's knowledge and awareness, as long as the method is credible and has the appropriate dignity.

Communications are vital to sustain interest, reinforce knowledge, and update people's education on safety and health. Periodic communications have the impact of spaced repetition which has proven effective in developing personal knowledge as a means to accident control. Many publications are available from commercial sources. These are practical if they truly pertain to critical problems and are not simply used as an easy way. Personalized publications, even if not highly polished, are usually more effective if well thought out. Such publications do not have to be extensive in scope and studious in form. They do have to be clear, pertinent, and regular.

17.6

1. A program should be developed to create incentives for group efforts in safety and health program activities.

2. The group activities may be by department, work section, or other form of employee association.

3. The recognition program should prompt or require the active participation by all, or almost all, the people in the group.

4. Commendations or awards to employee groups should be presented by a general manager, as appropriate to the type of recognition.

5. Group recognitions should be regular and frequent. Where a sustained performance is required, the recognition or a progress report should be given at least every three months.

Safety is a team effort. One of the better incentives to safety performance is peer dynamics through mutual goals and recognition for achievement of those goals. Commendation for group achievements, and public recognition for meeting criteria that have been adequately publicized and objectively measured creates an effective, competitive incentive for employees' work toward safety and health program objectives.

17.7

1. An ongoing housekeeping competition should be conducted as an incentive to good order.

2. The competition should be based on objective measurement of cleanliness, conservation of materials and supplies, and proper storage of tools and materials.

3. A standard evaluation form should be used to evaluate performance in orderliness so build on the present form you already use.

Clutter, obstruction to movement, refuse, and improper storage of hazardous substances are factors in many serious accidents. Orderliness in work and storage areas is a direct indication that such exposures are under control. Many leading organizations use housekeeping contests as an incentive to keeping these areas in order.

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada

ORGANIZATION/LOCATION

Hiring and Placement

PROGRAM AREA EVALUATED

54.3% - Significant

EVALUATION LEVEL:

September 12-15, 1989/M. D. Crucefix

DATE / CONSULTANT :

EVALUATION FACTORS:		POSSIBLE POINTS	POINTS SCORED
18.1.	Physical Capability Requirements	70	0
18.2.	Physical Examination	125	70
18.3.	General Orientation/Induction Program	90	90
18.4.	Pre-Employment/Pre-Placement Qualification Check	65	30
	TOTAL	350	190

Element Definition

A hiring and placement program should require that physical and mental demands be identified and that people possess the capability to work safely in a specific job and not endanger themselves, other people, or property. Physical examinations should then be carried out to ensure that potential employees are properly selected. That is, they are selected based upon their ability to perform the work satisfactorily rather than on a personal characteristics which will have no bearing on their potential job performance. An effective program should also require appropriate qualification checks for potential employees as well as formal orientations once they have been hired.

Existing Noteworthy Efforts

18.2 1. An appropriate medical examination is given each employee prior to placement, whether new hire or transfer, in a job that has established safety or health limitations.

18.3 1. All employees are given a general orientation, which includes the health and safety program.

2. Organization safety and health policy, legislative requirements, general rules, and hazard reporting are given in detail in the employee orientation.

3. Employees also receive written materials to reinforce and explain the safety and health information given in the general orientation.

Suggestions For Continued Improvement

18.1 1. A survey should be made of all jobs to determine the need for analysis on the basis of physical capacity. This includes manual lifting and carrying of materials, operation of mechanical controls, body positions and movement required to perform work tasks, maximum or minimum body size and reach, exposure to health hazards below normal thresholds, perception to sensory cues, reaction and coordination.

2. Intensive physical capability analyses should be made when the survey indicates that some safety or health hazards may occur to some people with physical or mental incapacities.

3. Observations of medical examiners should be compared to job capability analyses to verify that prospective employees or transferees have the capacity to do the job without endangering themselves, other people, or property.

The foundation of the personal factors that are basic causes of accidents is the lack of capacity to work safely. This can be either physical or mental, permanent or temporary. No person should be put into a job which he or she cannot perform within the acceptable degree of risk. The physical capability analysis is the objective method of determining the physical capacities that affect safety and health.

18.2 1. Extensive eye examinations should be given as prerequisite to placement in jobs where visual acuity, depth perception, color discrimination, darkness adaptation, or night vision recovery is critical to proper, safe performance.

2. Audiometric examinations should be given prior to placement in jobs where aural discrimination is required or where noise levels could result in hearing loss.

3. Examination for other medical conditions should be made when the environment, materials handled, or potential exposure would aggravate an existing health problem.

The medical examination, tailored to the exposures in the workplace and the medical history of the examinee, is very important as a basic control in the health and safety program. When a physical condition could alter the level of risk in a job, that condition must be identified by examination. Then the exposure can be limited or other controls applied.

18.4 1. When qualification is indicated by a license or certificate, a check should be made to substantiate that the license or certificate is valid and that there are no citations or other recorded incidents that would compromise the license.

In critical jobs such as operators of mobile equipment, a person's performance since training and certification may reveal a risk from lack of knowledge or skill, or improper attitude. These may be indicated by citations on file with the licensing authority.

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada

ORGANIZATION/LOCATION

Purchasing Controls

PROGRAM AREA EVALUATED

37.5% - Moderate

EVALUATION LEVEL:

September 12-15, 1989/M. D. Crucefix

DATE / CONSULTANT :

EVALUATION FACTORS:		**POSSIBLE POINTS**	**POINTS SCORED**
19.1.	Procurement of Goods	210	70
19.2.	Selection and Control of Contractor	190	80
	TOTAL	400	150

Element Definition

Purchasing controls are necessary to limit the safety and health problems being faced by management at Denison - Potacan Potash Company. Purchasing controls are accomplished through a purchasing program which takes into account safety and health concerns when purchasing materials or services.

Existing Noteworthy Efforts

19.1 1. Prior to purchase, safety and health information must be obtained from suppliers for machinery and equipment.

2. All known data on the chemical composition and hazardous properties of substances has a MSDS provided.

3. A standard form is used for requesting this information (letter format).

4. Good records are kept on the quantities of chemicals purchased for the mine.

19.2 1. Well documented pre-job meetings are held between the mine and large contractors on site to review the safety program requirements of the contractor.

2. The mine ensures that the contractor's insurance includes coverage for company loss due to contractor accidents.

Suggestions for Continued Improvement

19.1 1. When designing your purchasing policy, ensure that all points are covered that are listed in this element. The policy should emphasize the control of loss exposures at the purchasing stage.

2. The purchasing control procedure should give details and instructions for:

   1. Obtaining information on safety and health aspects and applicable standards from prospective suppliers of equipment and tools.
   2. Specifying compliance with safety standards in purchase orders for equipment, tools and personal protective equipment.
   3. Developing safety and health specifications for equipment, tools and materials purchased on a regular basis.

19.2 1. A survey should be made of all process materials; supplies, products and waste in inventory to determine which should have safety and health specifications to control loss exposures.

2. Following the survey objectives should be set for the development of specifications.

3. Items with the highest loss potential should get priority in the development of materials management specifications.

4. A composite listing of all hazardous materials should be developed to catalog the loss exposures and enable effective management control.

5. Safe practices for handling, storage, and disposal should be written for all hazardous materials. These should be distributed to appropriate operations, maintenance, and materials handling supervisors.

6. Safety review and approval of each type of hazardous material should be required before material is initially ordered from vendors.

7. Purchasing and safety personnel should make joint evaluations of the compliance with and effectiveness of purchasing controls at least every three months, using sampling techniques.

One of the better opportunities to control hazard exposures is at the point where equipment, tools, materials, and supplies are brought into the organization. The point of control is the purchasing function. The instruments of control are the purchase request, the purchase review, the purchase order, the receiving inspection, the stock inventory, the issue records and the disposal records. Avoiding the unnecessary risks, and developing controls for the remainder in advance of the exposure minimize the total costs of safety and enhance productivity.

19.3

1. Ensure that all contractor's safety programs are approved (no matter what size contractor) prior to implementation and are consistent with the views and objectives of the organization.

2. Ensure that the contractor's safety record is acceptable to your standards prior to them commencing any work on the site.

3. The contractor is to keep a close liaison with the company on all personal records and reports.

EVALUATION REPORT

Denison - Potacan Potash Company
Sussex, New Brunswick, Canada

Off-The-Job Safety

ORGANIZATION/LOCATION

PROGRAM AREA EVALUATED

27.6% - Moderate

September 12-15, 1989/M. D. Crucefix

EVALUATION LEVEL:

DATE / CONSULTANT :

EVALUATION FACTORS:		**POSSIBLE POINTS**	**POINTS SCORED**
20.1.	Problem Identification & Analysis	120	30
20.2.	Off-the-Job Safety Education	130	39
	TOTAL	250	69

Element Definition

An off-the-job safety program involves identifying the types of off-the-job accidents employees, and sometimes their family members, are having which have an impact on their job performance at Denison - Potacan Potash Company - Sussex, New Brunswick. The costs of employee off-the-job accidents are significant. In fact, most organizations discern that they are losing about 3 to 8 times as much from off-the-job accidents as from on-the-job accidents.

Formal programs should be directed towards identified off-the-job problems to reduce the chance that they will result in future loss to Denison - Potacan Potash Company - Sussex, New Brunswick employees.

Existing Noteworthy Efforts

20.1 1. A program has been developed to identify exposures to employees off-the-job and to assess the impact of off-the-job injuries and health hazard exposures.

20.2 1. Off-the-job and family safety topics related to employees' activities are presented in group meetings.

2. Educational materials on off-the-job safety are distributed to each employee regularly for use in their personal safety activities.

Suggestions For Continued Improvement

20.1 1. A system should be set up through which supervisors can report employee absences that are due to off-the-job accidents.

2. Information on claims paid that were attributed to off-the-job and family accidents should be required of insurance carriers.

3. An analysis of absences which are the result of accidents to members of employees' families should be included in the studies of impact on the organization.

4. A project team should be set up to collect data on off-the-job accidents and develop control measures to help control this problem for both employees and the organization.

In most organizations, off-the-job accidents are several times the work injuries and illnesses. These, plus accidents to family members which cause employees to be absent, have a significant impact in critical employees missing, which makes accidents involving temporary replacements more likely, etc. Organizations need to first assess the impact and then identify causes if they are to be effective in controlling off-the-job accidents. This part of the safety program is more difficult because only the employee has direct control in the situation.

20.2 1. Information related to the specific causes of employees' accidents off-the-job should be developed and provided to employees for their personal safety efforts.

2. Special safety awareness and educational programs should be held for members of employees' families. These can be done as part of public relations activities or through community and school channels.

Most off-the-job accidents occur where the organization has no direct control. In order to reduce these accidents, the employee must be educated on loss exposure identification and effective safety measures. This can be done in part through regular safety meetings. To have appreciable effect, however, the education must be done in special programs or personal contact with the employees.

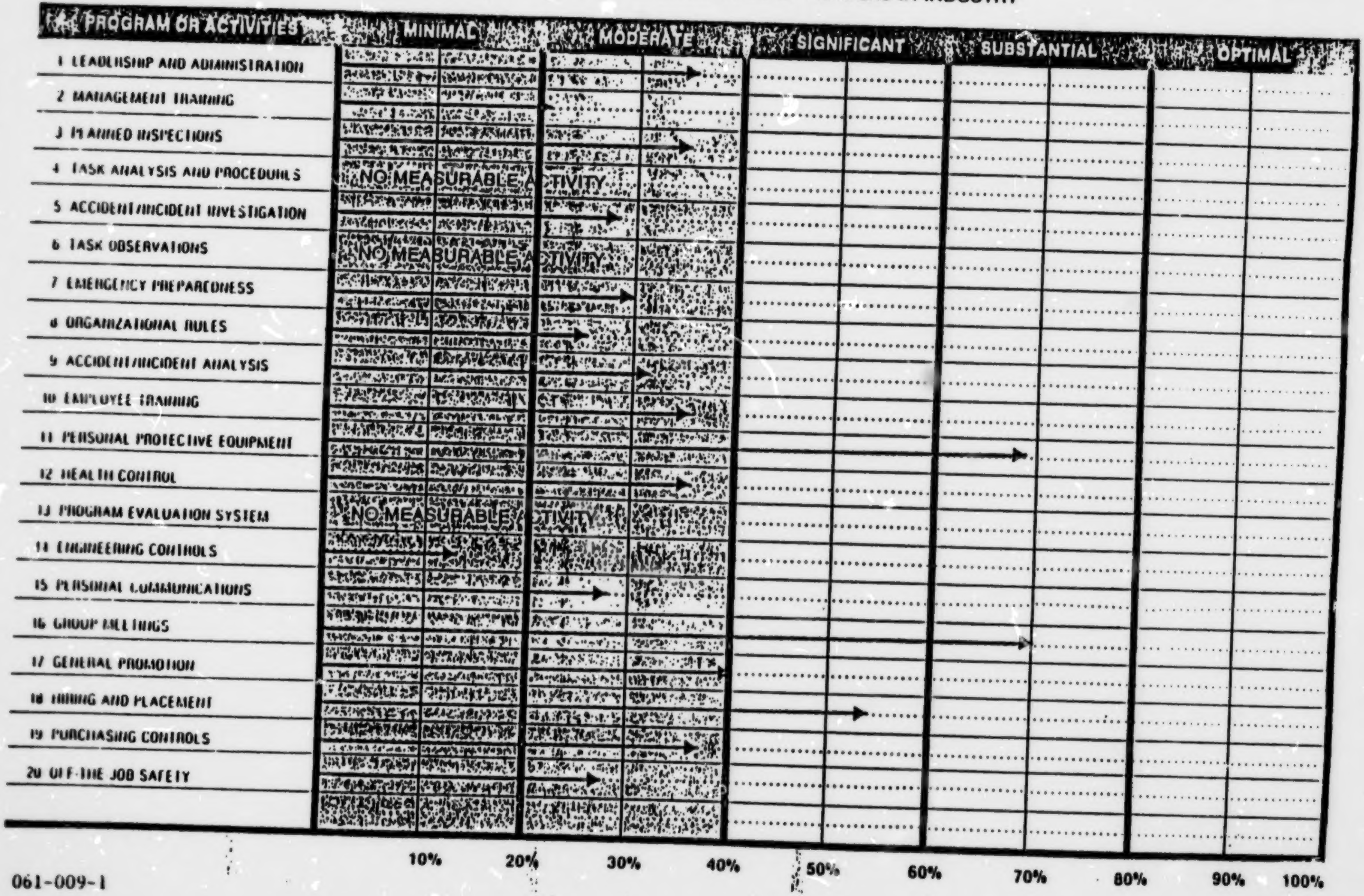
Graphic Profile Summary

GRAPHIC PROGRAM EVALUATION SUMMARY

M. D. Crucefix
CONSULTANT/S

September 12-15, 1989
EVALUATION DATES

COMPARISON TO PROGRAM STANDARDS OF LEADERS IN INDUSTRY



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APPENDIX "E"

WITNESS LIST

Management	Name
General Manager	Ivan Duke
Superintendent Employee Relations	Denis Lehoux
Operations Manager (March 19)	James Greenhalgh
Mill Superintendent (March 19)	Robert Nylen
Mine Superintendent (also interviewed as Company re - Co-Chair. JOHSC)	Stephen Hodgson
General Mine Foreman (Cutters & Construction)	Maurice McDonald
General Mine Foreman (Drill & Blast)	Wayne Marshall
Training Instructor (Underground)	James Wilson
Senior Mine Foreman	Ernest Hamilton
Shift Supervisor (Drill & Blast)	Claude Grenon
Shift Supervisor (Cutters)	R. Charles Archibald
Superintendent Engineering	David Waugh
Senior Rock Mechanic Engineer	Cyril Monahan
Ventilation Engineer	David Willoughby
Personnel Training Supervisor	John Sumner
Safe Supervisor (Underground)	Richard Campbell
Fire Chief/Mill Surface Safety Inspector	Peter Reid
Loss Control Superintendent	Thomas Poulin

Union

Union Safety Inspector	Robert Feltus
Joint OH & S Com. Co-Chairman	Kevin McCaig
Marietta Operator	Stanley Sproul
AM 100 Operator	Wayne Vail
Driller-Blaster	Pierre Lemaire
Scoop Tram Operator	Sterling Parks
Hoist Operators	Robert Carmichael
Mechanic	William Hoddinott
Union Co-Chairman (JHSC - Mill)	Stephen Price
Workers rep. JHSC for the contractor	John Sinclair
Management rep JHSC for the contractor	Jung Choi
Junior Miner - 6 months	Scott Mercer
Junior Miner - Drill-and-Blast	John McLean

Expert

Instructor - Cambrian College	Dennis Shannon
Union President Local 1929	Thomas Harris

Commission

Safety Officer	Stuart Cowan
Director of Inspection Services/Mine Safety	Ray Blanchard

APPENDIX "F"

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2	Staff Employee List and Job Description

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4	Internal Responsibility Chart
5	Collective Agreement
6	Policy Statement
7	Sample Safety Memos
8	Policy Statement - Life Threatening Illnesses
9	Principles of Safety
10	Safety Card
11	Independent Annual Fire Protection Audit
12	Inventory of Mine Rescue Equipment
13	Operations Manual Section 9
14	Novice Miner I
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16	Underground Emergency Procedures Manual
17	Environmental Protection Procedures Manual
18	Mill Emergency Procedure Manual
19	S.O.S. Safety Bulletin Motto
20	Safety Certificate
21	Sample Letter of Commendation
22	Sample Letter of Special Commendation
23	Photographs of Trophy Cases and Certificates
24	Today's Supervisor
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27	Sample Safety Meeting Minutes
28	Sample Notice issued by General Manager

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29	Sample Potagram
30	Living Safety Magazine
31	Photo of Status Board
32	Supervisory Orientation Course Outline
33	Supervisory Administrative Guide
34	Management Development Program
35	Management Guide to Loss Control
36	Hamilton-Carter Outline
37	Mine Production Training Manual
38	Basic Mine Rescue Training
39	Supervisory Appraisal Form
40	Orientation Program Outline
41	WHMIS Training Outline
42	Evaluation Form
43	Sample Joint Health & Safety Committee Minutes

44	Inspection Synopsis and Report
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46	Investigation Report
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48	Letter of August 2, 1989 and Union's Agreement
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61	Practical Loss Control Leadership
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81	Ventilation Plan
82	Ventilation and NO2 Gas Level Check
83	Contract Administrator's Weekly Summary
84	Planning Meeting Minutes
85	Sample Reports
86	Safety Manual
87	Book of Standards
88	Business Card
89	Sample Safety Card
90	Operator's Shift Record
91	Operator's Shift Record Drill Jumbos
92	Safety Talk Materials
93	Sample Investigation Report
94	Unusual Occurrence Report
95	Special Job Instructions Sheets
96	Mobile Vehicle Fire Protection Systems Report

EXHIBIT LIST

EXHIBIT	DESCRIPTION	PAGE	VOLUME
97	Copy of Minutes of Surface Meetings of Occupational and Health Committee	24	1
98	Copy of minutes of underground meetings of Occupational and Health Committee	24	1
99	Copy of Inspection Reports, Surface	24	1
100	Copy of Inspection reports underground.	24	1
101	Letter dated December 1, 1989, from Mr. Duke to Occupational Health and Safety Commission	290	2
102	Letter dated December 15, 1989, from Mr. Greenhalgh to Commission	291	2
103	Letter from Mr. Greenhalgh to Mr. Cowen - dated January 11, 1990	393	3
104	1989 Annual report on fire protection and prevention	394	3
105	Article 10, DPPC and Canadian Mine Development contract of November 13, 1985	394	3
106	Correspondence between DPPC and Occupation Health and Safety Commission regarding terms of inquiry	395	3
107	Signed copy of Joint Health and Safety Committee Minutes of September 7,1989	678	4
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122	Emergency Procedures Manual	4193	23
123	Neil George Card	4227	24

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